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RAILROAD PURCHASING AND THE BUSINESS CYCLE

BY
JOHN E. PARTINGTON

WASHINGTON, D. C.
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1929

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DIRECTOR'S PREFACE

It has long been rather widely believed that alternating periods of expansion and depression in the railroad equipment industry have exercised an important influence upon the oscillations of general business in the United States. This volume undertakes to test the correctness of this thesis by analyzing for the period 1870-1926 the relationship in point of time between the appearance of improvement, or of recession, in general business conditions and variations in the volume of railroad purchasing.

The field which the book covers is intentionally a narrow one. It is, however, part of a larger whole. The business cycle furnishes a highly complex problem which can be studied most profitably by isolating particular aspects of it for the purpose of separate and intensive investigation. We hope that Mr. Partington's study will contribute to a better understanding of the cyclical fluctuations of business.

The committee in charge of publication of the project consisted of Charles O. Hardy and Adah L. Lee.

Edwin G. Nourse,
Director.

Institute of Economics,
November, 1929.

AUTHOR'S ACKNOWLEDGMENTS

The author wishes to express his great obligation to Dr. Charles O. Hardy, who originally suggested the study, and gave advice and criticism at all stages of the work. Grateful acknowledgment is also made of the courtesy extended by many corporation executives to whom application was made for assistance in the collection of data. The author is especially indebted to S. H. Vauclain, President of the Baldwin Locomotive Works (now Chairman of the Board of Directors), for permission to consult the order books of that company covering a period of 40 years. Invaluable aid in the use of these data was rendered by R. H. Sanford, the company's librarian.

Thanks are due to many librarians in Washington, and elsewhere, who were unfailingly courteous in giving aid. A. B. Lindsay of the Bureau of Railway Economics assisted materially in locating valuable sources of periodical information. Max Shepard compiled a large portion of the data on which the study is based.

JOHN E. PARTINGTON.

Iowa City, Iowa,
November, 1929.

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RAILROAD PURCHASING AND THE BUSINESS CYCLE

RAILROAD PURCHASING AND THE BUSINESS CYCLE

CHAPER I

OBJECTIVES AND CONCLUSIONS OF THE STUDY

This inquiry was undertaken principally to determine the relationship, in point of time, between railroad purchasing and the business cycle. Its ultimate purposes were to discover whether changes in the volume of orders placed by the railroads have tended to precede, to accompany, or to follow after similar changes in business activity generally, and to determine to what extent the railroads have tended to confine their purchases to periods of high prosperity and to cease buying during periods of depression. These purposes led to an examination of the relationship between railroad purchasing and railroad earnings, as well as to the relationship between railroad purchasing and more comprehensive indexes of business activity.

The investigation consisted largely of the compilation of a record of the orders for rails, passenger cars, freight cars and locomotives placed by the steam railroads in the United States since 1870. These totals are inclusive of orders placed by the railways in their own shops.

The inquiry was limited to the four major types of equipment mentioned above, because it did not appear that there was sufficient information available covering the purchases of other materials to form a basis for any conclusions. Moreover, it was believed that changes in

the volume of orders for rolling stock and rails would be adequately representative of the total purchases of the steam railroads. For similar reasons the study was not carried back beyond 1870. The data are too scanty in earlier years to make their collection worth while. Even for the period of the seventies they are rather meager.

Brief reference may be made to the different theories that have been expressed relative to the questions that form the prineipal subjects of inquiry in this study. The statements of these theories have sometimes been supported by an array of figures, at other times not.

There is, first, the theory that railroad buying activity rises and falls somewhat in advance of similar movements of business generally. Statements to this effect appear, for example in the writing of J. H. Parmelee [1] and E. B. Leigh.[2] The *Financial Review* has expressed the view that this theory was true for certain selected years.[3]

Others writers take a different position, believing either that the curve of railroad buying tends to move in close conformity with major fluctuations in commercial and industrial activity, or that it lags behind. Frequently no clear distinction is drawn between these two possibilities.[4]

[1] "The Stability of Railway Operations," in *Business Cycles and Unemployment,* 1923, p. 220.

[2] *Railway Age,* December 19, 1913, p. 161; April 4, 1919, p. 879; January 7, 1921, p. 28.

[3] *Financial Review,* 1906, p. 11.

[4] Compare Dixon, F. H., "Transportation and the Business Cycle," a paper appearing in Edie, L. D., *The Stabilization of Business,* 1923, pp. 139, 140; *Railway Age,* May 16, 1924, p. 1192; Lavington, F., *The Trade Cycle,* 1922, p. 56; Mitchell, W. C., "The Problem of Controlling Business Cycles," in *The Stabilization of Business,* p. 45; Interstate Commerce Commission, *Annual Report of the Statistics of Railways in the United States,* 1892, p. 14.

It has been held that "orders are largest when traffic is growing fastest,"[5] that the guiding factor is net income rather than gross income,[6] and that even in times of depression the construction of line and the equipping of the carriers continue at an appreciable rate.[7] Distinctions have been drawn between the policies of different railroads, it being pointed out that certain ones have made it a practice to buy when there was an "accumulation of idle locomotives in roundhouses and idle cars on sidings,"[8] and this contention has, in turn, been denied.[9]

Other theories link the variations in the volume of orders for equipment with the changing credit situation, especially the credit of the railroads themselves. In brief it has been contended that increases or decreases in buying activity have been very largely but a reflection of changes in the ability of the railroads to borrow money, and in the rates prevailing in the money market. This line of argument was very popular in 1921 and 1922, and also during the period from 1908 up to the war era.

The theories first mentioned—those having to do with the physical as against the financial approach to the problem—are not altogether in conflict and yet they differ sufficiently to leave one puzzled as to the usual time relationship, if any, between the railroads' pur-

[5] Clark, J. M., *Economics of Overhead Costs,* 1923, p. 394; also see, by the same author, "Business Acceleration and the Law of Demand," *The Journal of Political Economy,* March, 1917, pp. 217-235.

[6] *Railway Age,* April 18, 1925, p. 968.

[7] Cassel, G., *The Theory of Social Economy,* 1924, p. 557.

[8] Digest of Report of Committee on Stability of Railway Purchases, *Railway Age,* January 7, 1921, p. 35.

[9] *Railway Age,* April 1, 1921, p. 853.

chases of rolling stock and rails and the movements of the business cycle.

The conclusions which we have reached may be summarized as follows:

(a) In a majority of business revivals during the period from 1870 to 1926, railroad buying revived some months before commercial and industrial activity appears to have begun its recovery. Likewise in most declines in business activity, the railroads curtailed their buying activities in advance of the decline of general business. This tendency for railroad purchasing to anticipate turns in the curve of business activity was more marked in recessions than in revivals.

(b) The tendency for changes in railroad buying activity to precede similar changes in commercial and industrial activity was much more marked in the nineteenth century than it has been in the twentieth century.

(c) Of the four types of equipment studied, locomotive purchases showed the greatest tendency to fluctuate with changes in business conditions, and rail purchases the least. Freight car buying fluctuated almost as much as those of locomotives; passenger car buying considerably less.

(d) Up to 1900, changes in the volume of rail buying tended to precede similar changes in the volume of orders for other types of equipment. For the years since 1900 no such tendency is evident.

(e) The degree of fluctuation in railway purchasing with changes in business activity shows no pronounced tendency to change. A possible exception should be made to this statement in the case of rail orders, but it is clear that orders for rolling stock are concentrated in prosper-

ity periods during recent years as much as was the case before 1900.

(f) While the railroads have bought most freely when their earnings were largest, changes in the volume of orders for railway equipment have almost invariably preceded similar changes in the gross earnings. It appears probable, therefore, that the relationship between railway purchases and railway earnings is to be viewed as part of the general body of interrelationships which make up the business cycle, rather than as evidence of a direct dependence of the purchasing activity on the state of the revenues.

(g) Our data do not enable us to explain the causal relationships between changes in railroad purchasing and other types of business fluctuation. The tendency for railroad buying to precede changes in the pace of business activity may plausibly be accounted for either as a result of changes in the cost of equipment, brought about by cyclical fluctuations in wages, interest, and other costs, or as an evidence of foresight on the part of the railroad managements, or, finally, as evidence that the purchases of railroads are themselves a major factor determining the ebb and flow of business. The decreasing tendency for changes in railroad purchasing to anticipate increases and decreases in general business activity during recent years is in harmony with the third explanation, since railroad purchasing has obviously become, during recent years, a smaller element in the general business situation than was the case a generation or two ago; but the causal interrelationships between different phases of business activity constitute too complex a problem to permit of generalization on the basis of our study of a single element in the situation.

CHAPTER II

SOURCES AND METHOD

There are no official sources of information to which one may turn to secure a record, month by month, of railroad purchases for any considerable period. During the few years that have passed since the close of the war the government, the railroads, and the manufacturers of the larger types of railroad equipment have all displayed great interest in the collection and frequent publication of current statistics bearing on orders, deliveries, repairs and the condition of existing equipment, and adequate information of this character is readily available.[1] But the period covered by these reports is entirely too short to be of much significance in a study of the business cycle.

Annual figures on rail production are available as far back as 1860.[2] Also the *Railway Age* has been publish-

[1] Illustrative of these types of publications are the following:
The American Railway Car Institute, 61 Broadway, New York, issues annually a report entitled: *Statistics: Car Building and Car Repairing*. These reports include monthly data on orders and deliveries beginning with 1921; yearly data, beginning with 1911. They cover freight cars, passenger train cars, interurban and subway cars, street railway cars.
American Railway Association, Car Service Division, compiles detailed reports, by railroads, regarding locomotives and cars: number owned, leased, ordered, being repaired, shortages, etc.; monthly, quarterly, and annual reports. Compilation of various data began at different times, but most of this information is available back to 1922.
U. S. Dept. of Commerce, *Survey of Current Business*, published monthly beginning August 1, 1921, contains monthly figures on new orders, unfilled orders, and shipments of locomotives and freight cars and new orders for passenger cars, with yearly data running back to 1913 in most cases.

[2] American Iron and Steel Association, *Annual Statistical Report*, 1904, p. 118.

ing yearly statistics on railroad purchases of locomotives, freight cars and passenger cars since 1901. They are compiled from its own weekly news items and from questionnaires sent to the railroads and the principal equipment builders.[3] These data are thus semi-official in character and reasonably complete. But annual statistics are too infrequent to serve well as an index of cyclical fluctuations. Moreover, these totals cannot be used as they stand since they include orders placed by foreign buyers, industrial concerns, and street and electric railways in addition to those by the steam railroads.

The data which form the basis for this study were obtained chiefly from news items appearing in the weekly or monthly issues of railway and iron trade periodicals. These magazines made no claim to completeness with respect to the information on railroad equipment orders which they carried nor even to a high degree of accuracy.

Three other principal sources of information were drawn on to supplement the material taken from the magazines. The *Bulletin of the American Iron and Steel Association* contained a department devoted to the rail markets during the years included in this study down to 1913. It furnished regular weekly reports on rail orders as they were placed in the principal manufacturing centers which were fairly complete. This semi-official organ of the rail manufacturers was edited by the American Iron and Steel Association from 1866 to the end of 1912, when the duty was relinquished to the American Iron and Steel Institute at New York City. The form and content of the *Bulletin* were greatly

[3] For brief statement as to basis of compilation and methods used see *Railway Age*, January 6, 1905, p. 7.

TRADE PERIODICALS CONTAINING DATA RELATIVE TO RAILWAY PURCHASES

Name	Weekly or Monthly	Years Published	Years Available for This Study	Remarks
American Railroad Journal	W	1832–1886	1832–1886	Few items
Railroad and Engineering Journal	W	1887–1892	1887–1892	
American Engineer and Railroad Journal	W	1893–1895	1893–1895	
American Engineer, Car Builder and Railroad Journal	W	1896–1898	1896–1898	Became "Mechanical Edition" of *Railway Age Gazette* and in 1916, *Railway Mechanical Engineer*
American Engineer, and Railroad Journal	W	1899–1912	1899–1912	
Railway and Shipping World	W	1898–1905	1898–1905	
Railway and Marine World	W	1905–1911	1905–1911	
Canadian Railway and Marine World	W	1912+	1912+	
Railroad Car Journal	M	1890–1900	1891–1900	
Railroad Digest	M	1901–1902	1901–1902	Absorbed by *Railway Machinery*
Railroad Gazette	W	1870–1908	1870–1908	Jan. to Mar. 1870, missing
Railroad Age Gazette	W	1908–1909	1908–1909	
Railway Age Gazette	W	1909–1918	1909–1918	Formerly *Railroad Age Gazette*
Railway Age	W	1918+	1918+	Formerly *Railway Age Gazette*
Railway Age	W	1876–1891	1876–1891	
Railway Age and Northwestern Railroader	W	1892–1901	1892–1901	
Railway Age	W	1901–1908	1901–1908	Absorbed by *Railroad Age Gazette*
Northwestern Railroader	W	1887–1891	1887–1891	Absorbed by *Railway Age*
Locomotive Engineer	M	1888–1891	1888–1891	
Locomotive Engineering	M	1892–1902	1892–1902	
Railway and Locomotive Engineering	M	1903+	1903+	No items on orders; some trade comment
Railway World	W	1875+	1875+	
Chicago Railway Review	W	1868–1879	1875–1879	
Railway Review	W	1879–1897	1879–1897	
Railway Engineering Review	W	1897–1913	1897–1913	
Railway Review	W	1914+	1914+	
Age of Steel	W	1857–1902	1870–1901	Called "Journal of Commerce" 1857–1879. Sold to *Iron and Machinery World*
Iron Age	W	1855+	1867+	
Iron Trade Review	W	1867+	1886+	
National Car and Locomotive Builder	M	1885–1895	1889–1895	Absorbed by *Railroad and Engineering Journal*
National Car Builder	M	1870–1885	1870–1875	
St. Louis Railway Register	W	1873–1895	1880–1885 1880–1892	

altered immediately afterwards, and it ceased to publish weekly reports on the state of the rail trade. However, its reports contain very complete annual data.

A large amount of accurate data regarding purchases of locomotives was furnished by the order books of the Baldwin Locomotive Works. This corporation made its records available for the purposes of this investigation for the years from 1869 to 1900, inclusive. It is the only large corporation manufacturing the types of equipment being studied which appears to possess records of orders for the years previous to 1900.

The *Monthly Reports* of the Bureau of Statistics of the Department of Commerce (a bureau in the Treasury Department up to July, 1903) supplied information regarding exports and imports of rolling stock and rails for the entire period covered by the study. This information relates to deliveries of equipment and not orders, but was of some assistance in verifying the correctness of the data collected from other sources.

I. TRADE PERIODICALS

The table on page 10 lists the magazines which were used in this study. In most cases complete magazine files were accessible; the exceptions are indicated in the last column.

II. COMPILATION OF DATA

Nearly all of these magazines during some portion of their career maintained a separate department in which was reported the current sales of locomotives, freight cars, passenger cars, and rails to domestic and foreign buyers. A major task of this study has been the collec-

tion of these reports, an analysis of their content, and their compilation into a form amenable to statistical analysis.

The content of these magazine items was copied on forms devised to show: (1) the title and date of issue of the source of each item, (2) the nature of each transaction, that is, whether an order, a delivery, or equipment in process of being built or repaired, and (3) the names of the parties to the transaction. The information on rail buying furnished by the *Bulletin of the American Iron and Steel Association,* and the data on locomotive purchases taken from the records of the Baldwin Locomotive Works were treated in the same fashion. All the latter data were in the form of orders, and this was also true of most of the reports appearing in the *Bulletin.*

III. IDENTIFYING ORDERS

In transcribing these data it became very clear that the reports found in the different periodicals required careful scrutiny and sorting in order to verify and interpret the information which they contained.

The most serious difficulties grew out of the indefinite and incomplete character of many of the news items, especially those appearing in the seventies and eighties. There were frequent instances where the name of the manufacturer or the exact amount of the order was left out, and there were occasional omissions of the name of the buyer. In many cases lack of precision characterized the portions of the news items having to do with the dates of the orders. Often the reporters failed to learn of a transaction until many weeks after the order had been placed. In these cases the item would show that the

equipment was in process of building or had recently been delivered. Some of the periodicals were not over scrupulous about reporting the same transaction twice, and of course a transaction was often reported as an order and again as a delivery.

Since the material for this study was taken from a number of different contemporary publications, all attempting to chronicle developments occurring in the same industries, it was inevitable that some transactions would be reported from two or three sources and that contradictory reports should appear occasionally. The incompleteness of the information given in many of the news items made it somewhat hard to detect these duplications and to discover which of two contrary news items was correct.

Another source of difficulty in identifying a given order was the variety of names by which a particular road was designated. Many of the roads seem to have possessed several names, any one of which might properly be used. Nicknames were widely prevalent in the earlier days, and were very popular with some reporters. A road was often referred to by the name of its termini or as a "branch," instead of by its real title. This was particularly true of roads newly built, or in process of construction. The same order might be credited in one journal to the parent company and in another to a subsidiary. Because of minute shades of difference in the degree of control exercised by one road over another and to the fluidity of their interrelations, it would be small wonder if the reporters themselves were often puzzled.

In order to meet the problems arising out of the inadequacy and vagueness of the information contained

in some of the news items, and to make the data available for statistical purposes, two steps were necessary. First, all the information contained in the various magazines bearing on the purchases of a particular type of equipment by any given road was brought together. Then, on the basis of this combined information an estimate was made concerning the correct amount and the date of the purchase of each lot of equipment.

To accomplish these two purposes, all the information contained on the forms described above was transcribed on cards, some twenty thousand of them being required. The transactions of each road for each calendar year were placed on four separate sets of cards, one for each type of equipment.

The four types of equipment referred to were locomotives, freight cars, passenger cars and rails. Locomotives included both steam and electric engines, regardless of size, except that no "steam-motors," which were built in the seventies and eighties to haul street cars, were included. The various kinds of coal cars, box cars and flat cars, were all covered by the term "freight cars," for the purpose of this study. Passenger cars included dining cars, sleeping cars and chair cars as well as ordinary day coaches. Caboose cars were excluded.

The different units of equipment embraced within each of these classes were thus far from homogeneous. At any given time or over a period of years they differed widely with respect to size, purpose, and construction. However, it was not thought practicable to carry the classification farther, nor is it believed that the findings would have been materially changed had this been done. There seems to be no reason why a curve drawn to represent changes in the monthly volume of purchases of flat

cars over a period of years should follow a substantially different course from one depicting box car purchases.

On the other hand, the great increase in the tractive power of the locomotive engine as a result both of improvements in design and of growth in size, as well as the great increase in freight car capacity, owing in part to the introduction of the steel car, have worked to reduce the number of units purchased. It is not possible to compare the amount of railroad purchasing in one period with that of a period, ten or more years away, solely on a basis of the number of cars or locomotives purchased. But this of itself does not render it impossible to trace the relationships between the volume of railroad buying and the expansion and contraction of business activity. The result of the increasing size of the unit is merely to reduce the scale of the curve of purchases.

Many obvious cases of duplication of reports were eliminated in transcribing from the large forms. As some carriers were referred to under two or three titles, many transactions were recorded two or three times on as many different cards. In order to uncover these duplications, the information bearing on the names of railroads and on railroad mergers and reorganizations appearing in the annual editions of *Poor's Manual of Railroads* was used.[4] This made it possible to verify the names appearing on the cards and to trace the constantly changing status of the ownership and of the control of operations of the different roads. Various railroad guides and handbooks were helpful in associating nicknames with the appropriate roads.[5]

[4] The first issue of this publication appeared in 1868.

[5] Among the guides used, and the years for which they were available, were the following:

American Railway and Supply Directory, Boston, 1873; *American Railroad Manual for the United States and the Dominion,*

The data having been so classified as to bring together all the information bearing on the purchases of each of the four kinds of equipment by each buyer during each of the 672 months under review, there remained the problem of determining what the monthly purchases of particular carriers actually were. This involved the tasks of bringing harmony out of the conflicting reports which occurred occasionally in the different periodicals, of eliminating many instances of duplicated orders which still remained on the cards and of piecing together different bits of information to clear up the uncertainty that characterized particular individual items.

This problem of discovering the actual conditions pertaining to each order was less difficult than it might appear to be in view of the obstacles mentioned in the preceding paragraphs. In most cases the news items bearing on the same transaction which appeared in different periodicals were in substantial agreement and supplemented one another extraordinarily well. A large proportion of the transactions were noted in at least two sources. In those instances in which the reports were in disagreement the detailed information on the cards made it relatively easy to ascertain which was correct. There was almost always a preponderance of evidence pointing to a given set of facts.

Duplications were often checked by noting who the builders were. If two or three magazines credited one railroad with an order for 500 cars within the space of

---

New York, 1873-1914; *Appleton's Illustrated Railway and Steam Navigation Guide,* New York, 1856-1881; *King's Railway Directory,* New York, 1867, 1870-71; *Official Guide of the Railways and Steam Navigation Lines of the United States, Porto Rico, Canada, Mexico, and Cuba,* New York, 1888; Rand-McNally *Official Railway Guide and Handbook,* Chicago, 1878-1884.

a week or so, and each reported the order to have been placed with the same builder, it was quite clear that only one transaction was involved. On the other hand, if several builders were named there was less likelihood that the magazines were referring to the same order. Under such circumstances the transaction could be verified frequently by checking it against the reports of equipment in process of construction in different plants, or against a later news item recounting a delivery of equipment. It was only rarely that an individual item had to stand alone. The quite evident custom of appropriating items appearing in contemporary publications provided a very useful means of verifying reports, because there were enough instances of denials of each other's items to show that they were rarely copied without first being verified.

There were some cases in which not all the important facts bearing on a given transaction were available. But no transaction was included in the final monthly estimates placed on the cards unless there were sufficient data at hand to make it reasonably certain that an order had been placed, and that both the amount and the date were approximately correct.

IV. DATING ORDERS

In determining the month in which orders for rails occurred, it was assumed that there was as a rule an average lag of two to three weeks between the actual date of placing the order and the date of the appearance of a corresponding news item in a periodical. The application of this rule was that orders were assigned to the month preceding the one in which they were reported. The assumption is reasonable, even though somewhat arbitrary, and particularly so as regards the first 30

years studied.[6] Even though the magazines reported the order immediately after it was entered on the books, many such orders would appear in the first issue of the following month. What evidence is available goes to indicate that such dispatch in publishing this information was most unusual, especially in the earlier years. The orders for locomotives placed with the Baldwin Locomotive Works, the exact dates of which are available for the period 1870-1900, were almost invariably recorded two or more weeks late in the magazines. Furthermore, the same item which appeared in the first week's issue of the month in one periodical frequently came out the following week in a rival publication, and perhaps the succeeding week in still another magazine. There seem to have been no regular channels of information—the items were picked up here and there wherever available. This circumstance alone provides grounds for assuming a lag of some duration.

Of course, the rule of assigning orders to the month preceding the one in which they were reported in the magazines was not applied rigidly at all times. There were numerous instances, and they occurred with increasing frequency in recent years, in which the time of placing the order was stated very precisely in the news items. Whenever this was true, the rule, of course, was ignored.

Occasionally the magazines did not learn of a transaction until the cars or locomotives were in process of manufacture or ready for delivery.[7] In such cases it

[6] Most of the periodicals which were consulted were published weekly although there were a few monthly issues. The *Bulletin of the American Iron and Steel Association* came out three or four times each month.

[7] Items of this character were much more infrequent in the case of rails than of other types of equipment.

was difficult to determine the month in which the order was placed. No one formula could be followed. A clue was generally given by the length of time elapsing between the date of order and the date of delivery of other transactions occurring at the same time for which complete information was available.[8] This was the most satisfactory guide. Other news items gave information as to the approximate time within which deliveries might be expected on current orders. Manufacturers occasionally issued statements in which they noted certain months as being periods of very heavy sales. Particular railroads likewise supplied information of this nature at irregular intervals.

V. DATA ON TRANSACTIONS IN RAILS

For a large part of the period under review, down to the early years of this century, the information on rail orders published in the *Bulletin of the American Iron and Steel Association* and in the magazines was less complete than that in regard to locomotives and cars, in that the news items very frequently omitted the names of the railroads which were acting as purchasers and, less often, the names of the rail manufacturers. It was customary for a news item to state merely that a large rail mill in Buffalo, for example, had received an order for 25,000 tons of steel rails, from a New England road. The iron trade journals and the *Bulletin* were more given to this practice than were the railway magazines. The latter did not cover the rail trade as adequately as they did the rolling stock industry, but they seem always to have

[8] The order books of the Baldwin Locomotive Works were very helpful in this connection. They contained the date of shipment as well as the date when the order was placed for each unit of equipment.

published the names of the interested parties whenever they could obtain this information. But descriptive phrases, which were usually incorporated in the news items touching the iron trade, revealed rather clearly the identity of the railroad, and the builder as well, in a great many cases. Obviously such reports left a good deal to be desired in the matter of exactness, and opened the way for recording the same order two or three times. But since these news items constituted such a large part of the available material for the first half of the period included, it was not practicable to ignore them.

The fact that most of the data for the earlier years were taken from only one publication, the semi-official organ of the iron trade—the *Bulletin of the American Iron and Steel Association*—reduced considerably the dangers of accepting unconfirmed reports as *bona fide* orders and of counting the same order twice in the monthly totals.

Great care was taken to guard against the danger of duplication. All items which failed to include the names of the parties to the transaction were eliminated from consideration whenever they corresponded with an item occurring elsewhere but specifying buyer and seller. This practice undoubtedly resulted in the exclusion of a few items that were not duplications. Errors that were made were on the side of understatement. Such items became negligible after 1903.

The reports of transactions in rails possessed the advantage of appearing almost always in terms of orders rather than as equipment in process of manufacture or being delivered. This circumstance greatly simplified the task of fixing the month in which a given sale oc-

curred, since it was unnecessary to estimate the length of time intervening between the order date and the date of delivery.

The most serious problem confronted in the compilation of the data on rails was that of distinguishing an order from a " placement," a " reservation," a " release," or a " specification." The reporters were not always careful to be exact in their terminology, as conflicting items in the magazines so well testified.

The quarterly estimates of rail orders set forth in the table on page 219 are not defended as being anything more than fair approximations. The intention was to include only such agreements as resulted in the rolling of rails within a reasonable length of time.

Annual figures on rail production and on railway construction are available for the entire period covered by the study and were of some value. Monthly price quotations of Bessemer steel rails have been compiled extending back as far as 1868.

VI. PROPORTION OF ORDERS REPORTED

The validity of our results depends, of course, to a considerable extent on the size of the samples which we have collected. To test this, three checks are available, one exact and two approximate. For the earlier years (1870-1900) we can compare the results of our search of the magazine files with the actual record of orders shown by the books of the Baldwin Locomotive Works. For the years since 1901 we can compare our quarterly figures for all three types of rolling stock with the annual totals published by the *Railway Age*. These data are not strictly comparable, however, since, as was noted on page 9, they include purchases by others than rail-

ways. Finally, for rails we can get a still cruder check by comparing the order data with annual totals of rails produced, exported, and imported.

As is shown by the table in Appendix A (page 228), a comparison of the Baldwin orders reported in the journals with those in the company's order books indicates that for the first few years our sample is very small but that it improves rapidly. For 1870 no Baldwin orders were reported, though 253 were received by the company; and for 1871 and 1872 the reports included only about 10 per cent of the orders actually placed. Then for three years the ratio of reports to orders ran between 20 and 25 per cent. In 1876 the proportion jumped to over 50 per cent, and it averaged about that figure for seven years. In the middle eighties it dropped for several years to around 40 per cent; from 1889 to 1895 it averaged over 75 per cent; and for the years from 1897 to 1900 the percentage ran above 90.

This comparison makes it clear that the *trend* of our data does not represent the trend of railroad buying but rather that of railroad journal reporting. However, the growth in the size of the sample is sufficiently steady to indicate that the year-to-year fluctuations are reflected by our curves with substantial accuracy. At no point after 1873 (except in 1887) does the curve of Baldwin orders, drawn from the journals, give a picture of the cyclical fluctuations substantially different from that given by the complete data. We have no reason to think that our data as to passenger and freight car buying are either more or less complete, on the whole, than are our locomotive data.

For the years since 1901 the comparison of *Railway Age* data with our reports indicates that we are quite

safe in using the tables compiled from the journals as indexes of actual fluctuations of railroad buying. (See Appendix A, page 229.)

Our check on the completeness of our reports for rail is still less precise. The only totals against which we can check our data are figures for "apparent consumption" computed from statistics of production, imports, and exports. These estimates do not take account of changes in stocks in the hands of either manufacturers or of consumers. Hence they are not a precise measure of either consumption, sales, or orders, in any particular year. Over a period of years, however, they should correspond with the volume of rails purchased. The two series are not strictly comparable, since our data include some orders which were afterward cancelled, while the "apparent consumption" includes rails used by industrial plants and by electric railways. Nevertheless, the comparison (which is shown in detail in the table in Appendix A, page 230) does throw some light on the completeness of our sample, and indicates that except for very early years a large fraction of the business was reported.

VII. CLASSIFICATION OF BUYERS

All of the sources from which information was obtained reported indiscriminately sales of railroad equipment to domestic and foreign railroads, to street car, subway, and elevated lines, to industrial concerns and private persons. This custom made necessary the establishment of certain categories to be used in classifying the data and in sorting out those orders not considered to have a bearing on the main issues raised in the investigation.

The sales were first of all divided into three groups, namely, (1) United States, (2) Canada, (3) foreign countries. The first two groups included sales to railroads and others whose business was confined largely to the United States and to Canada respectively; the third group consisted of all remaining sales.

VIII. PURCHASES BY BUYERS IN MEXICO

Sales to railroads and industrialists in Mexico were placed in the foreign groups because the economic life of that country is relatively remote from ours and the interactions between industrial developments in the two seem hardly appreciable. Mexico's importance as a factor in our commercial life has been small.

The problem of dividing the purchases of those systems whose lines cross the southern border, into United States and Mexican purchases, was not a formidable one. They were only four in number, and with the exception of one, the Kansas City, Mexico, and Orient Railway Company, each system lies very largely in one country or the other.[9]

The plan followed was to eliminate from the aggregate of sales to United States railroads all sales to the

[9] These roads are as follows:

(1) The National Railways of Mexico, which leased the Texas-Mexican Railway in 1884. At that time this United States branch was 169 miles in length. Up to 1914, the latest year for which figures are available, the National Railways had not increased its mileage in this country.

(2) The Sonora Railway, lying in Mexico, and acquired by the Atchison, Topeka and Santa Fe System in 1882. At that time this road was 262 miles long. The Sonora Railway became a part of the Southern Pacific Company in 1898, and by 1923 this latter system had increased its Mexican lines to 1,243 miles.

(3) The Kansas City, Mexico, and Orient Railway Company, which began operations in 1906 with 168 miles of line in Mexico and 152 miles in the United States. By 1920 it had increased its lines to 226 miles in Mexico and 466 miles in this country.

National Railways of Mexico or its American extension the Texas-Mexican, but to include the total purchases of the Southern Pacific Company and the Atchison, Topeka, and Santa Fe Railway Company, each of which, at different times, has owned and operated branches in Mexico. The Kansas City, Mexico, and Orient Railway Company, whose lines are divided on a two to one ratio between the United States and Mexico, was treated as though it lay wholly in the United States. The net result of this procedure was to credit United States railroads with purchases of equipment for 96 more miles of line than actually lay in this country in 1890, and for 1,305 excess miles in 1920. These additional mileages were 0.06 per cent of the total length of line in the United States in 1890 and 0.51 per cent in 1920. The degree of correlation between length of line and volume of railroad purchases is not known, but it seems safe to assume that the inclusion of this Mexican mileage had no appreciable effect on the statistics relating to United States roads.[10]

Sale of equipment to Cuba, Alaska, and Hawaii were classified as foreign orders, the reasons being the same as in the case of Mexico.

IX. PURCHASES OF CANADIAN CARRIERS

The purchases of equipment by Canadian roads were separated from those of United States roads but for reasons quite different from those applying in the case of Mexico. There is general agreement that commercial and industrial developments in the two countries are

[10] The U. S. Department of Commerce has issued recently a report on the railroad systems in Mexico. See *Railways of Mexico, Trade Promotion Series,* No. 16, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.

closely interrelated, but the extent to which the progress of depression and prosperity in the one is influenced by conditions in the other is not known. It is certain that the timing of movements of the business cycle in the two areas does not correspond precisely.

It was not possible, however, to separate American and Canadian purchases with complete accuracy. There are several systems which own or operate lines on both sides of the border and in purchasing equipment they have not, as a rule, made it clear whether it was intended for the Canadian or the United States portion of their system, or for both. There have been a few notable exceptions to this general practice. Equipment orders for the Minneapolis, St. Paul, and Saulte Ste. Marie Railway Company have appeared separately in the magazine reports, although that system has been controlled by the Canadian Pacific Railway Company since 1924. Likewise, for many years a large portion of the lines of the Grand Trunk Railway (now forming part of the Canadian National Railways) lying in the United States were grouped under the name of the Grand Trunk Western Railway, and in the news items a distinction was made between orders for those lines and the Grand Trunk system in Canada.

However, these international railroads followed a varying practice, sometimes distinguishing between orders for the United States and Canadian portions of their lines and at other times not doing so. For example, the Canada Southern Railway entered into an agreement with the Michigan Central Railroad, in January, 1883, by the terms of which the Michigan Central Railroad was to operate this road in

connection with its own for 21 years.[11] Thereafter orders for the Canada Southern Railway occasionally were reported separately, although the Michigan Central Railroad was evidently operating some of its own rolling stock over this road also. The approximate number of miles of line in Canada which were owned by the United States roads and whose equipment requirements were not kept distinct from those of the portions of these systems lying in the United States, are shown by decades in the table on page 28. Likewise, the table gives the same information regarding Canadian systems. It also shows the net amount which was credited, at the end of each interval, to the country whose railroads controlled the greater mileage on the opposite side of its boundary, and its percentage of the total mileage in the United States.

This tabulation of the mileage operated in the United States by Canadian carriers and the mileage operated in Canada by United States carriers is submitted merely as a rough indication of the magnitude of the error involved in including equipment ordered for use in Canada with United States orders and throwing out equipment ordered for use in the United States because the order is of Canadian origin. The correspondence between length of line and volume of equipment orders probably is far from exact, and must vary widely, both with respect to different carriers and to different periods. Nevertheless, it seems to be the only available measure of the relative importance of the volume of orders incorrectly credited to the railroads of one country or the other.

[11] On January 1, 1904, by the terms of a new agreement, the Canada Southern Railway leased its properties to the Michigan Central Railroad for 999 years.

As was true of the purchases of lines running over the southern international boundary, the error involved in including with the orders for United States roads certain lots of equipment which were presumably to be used to haul Canadian traffic obviously could not have been appreciable.

LINE OPERATED IN CANADA BY UNITED STATES RAILROADS, AND IN THE UNITED STATES BY CANADIAN ROADS, FOR WHICH ORDERS WERE NOT REPORTED SEPARATELY [a]

Year	Foreign Mileage Operated			Total Railway Mileage in United States	*Excess as Percentage of Total Mileage in United States*
	By U. S. Roads	By Canadian Roads	By U. S. Roads in Excess of Canadian		
1874....	104	295	—191 [b]	72,385	—*.26* [b]
1884....	492	318	174	125,345	*.14*
1894....	603	570	33	178,708	*.02*
1904....	759	622	137	213,904	*.06*
1914....	1,305	622	683	252,105	*.27*
1924....	1,275	671	604	250,156	*.24*

[a] From *Poor's Manual of Railroads*, reports of the Interstate Commerce Commission and Canadian Year Book.
[b] Excess of Canadian over U. S.

X. CLASSIFICATION OF DOMESTIC ORDERS

A great variety of enterprises in the United States, in addition to the railroads, have bought and operated railroad equipment. Among these enterprises have been street car lines, elevated roads, and interurbans; industrial concerns such as meat packers, logging companies, plantation owners, steel mills, and oil refineries; shippers of various types of perishable products; shippers of livestock, including horses, cattle, and poultry; and independent car line companies organized for the purpose of supplying special types of rolling stock.

No attempt is made to cover the buying activities of all public agencies of transportation using rails and rolling stock. Limitation of the term "railroads" to include only the steam lines is in conformity with general usage. The purchases of street railways and interurban lines were a small item up to the late 'nineties, and at no time were these companies a factor in the market for locomotives and freight cars. In some years they were fairly heavy buyers of rails and passenger cars, but their aggregate orders were always small in comparison with the volume placed by the railroads.

It remains true, however, that some railroads acquired and operated interurban lines, notably the New York, New Haven, and Hartford Railroad, and that they purchased equipment to be used on these lines in their own names. It was not possible to distinguish such purchases, and they were accordingly included in our statistics. They were almost exclusively confined to the passenger car type of equipment and were presumably inconsequential in amount.

The remaining groups of enterprises referred to above make up the private car owners of the country.[13] In 1913 there were 137,179 privately owned cars out of a total of 2,438,800 like cars in the United States, and by 1918

[13] The Interstate Commerce Commission instituted an inquiry "into the rules, regulations, and practices governing the operation of private cars on the railroads of the country" in 1912. The hearings were delayed due to litigation involving the jurisdiction of the Commission over private car lines and the final report was not adopted until the summer of 1918. This report was drawn on freely for the facts underlying the accompanying brief discussion of the sales of equipment to private car lines. See Interstate Commerce Commission, No. 4906, "In the Matter of Private Cars," 1918.

the number had increased to 200,000.[14] With the exception of the data for these two years there is no accurate information relative to the number of cars in the hands of private owners. The Commission states that "it was not until 1885 that sufficient of them were in use to make them a factor to be reckoned with in the transportation problems of the country."[15] Indicative of the total number of privately owned cars in certain later years are the approximate figures for privately owned tank cars: in 1889, 6,552; in 1912, 30,002; and in 1918, 70,000.[16]

The designation, "private car owners," is rather misleading since it includes some railroads. The Interstate Commerce Commission, "for convenience," divided these car owners into four classes, as follows: "Class A, independent companies not owned or controlled by railroads or shippers; Class B, incorporated car lines owned or controlled by railroads; Class C, incorporated car lines owned and controlled by shippers; and Class D, industrial concerns whose cars are owned by them and are used in connection with and incidental to their commercial activities."[17]

For our purposes an effort was made to exclude all transactions involving sales to members of any of these classes with the exception of Class B. It was not always possible to determine who the owners were in the case of some of the fast freight lines, but the error in either direction was of little significance. There were 641 private car owners who furnished answers to the interrogatories sent to them by the Interstate Commerce Commis-

[14] Interstate Commerce Commission, No. 4906, "In the matter of Private Cars," 1918, pp. 659-660.
[15] *ibid.*, p. 657.
[16] *ibid.*, p. 659.
[17] *ibid.*, p. 658.

sion in 1913. Of this number, Class D embraced 576 owners whereas only 6 owners belonged in Class B. The answers to similar inquiries in 1918, when there were approximately 1,000 owners of private cars used in commercial service in this country, were not tabulated in such a manner as to indicate the number of owners in each group, but the Commission expressed its belief that there had been " no substantial change in the number of owners in the different groups since January 1, 1913, except a large increase in Class D owners.[18] It is not probable that the number of cars belonging to the members of the different groups was proportional to the number of car owners, as many of those in Class D were known to possess very few cars. Nor do these figures necessarily give a true picture of the relative importance of the various groups during the years previous to 1913.

The reasons for sorting out the orders placed by the industrial concerns making up Class D are quite apparent. Their cars, which as a rule were built according to particular specifications, were used almost exclusively in the interests of the firms which owned them and hence were not available for the remainder of the shipping public even in the same industry. Furthermore, although the returns from which the Commission's figures were compiled do not include cars limited in their use to intraplant switching, there is no reason for thinking that the news items in the magazines made any such distinction. It is clear, then, that much of the rolling stock belonging to these industrials concerns did not enter into transportation service at all, aside from their movements about the company yards, and that the volume of orders for

[18] *ibid.*, p. 658.

that portion did have a different relation to general business conditions from that which the railroads bought for their own use.

The orders placed by the car lines owned by shippers were omitted for much the same reasons. Although the objection that they were used for industrial as opposed to transportation purposes does not hold in this case, it is true that as a rule they were limited to the shipments of their owners and were rarely leased.[19] Hence the purchases of these shippers' organizations likewise reflected the economic situation existing among a limited number of enterprises and not the time nor the manner in which the transportation needs of the entire business community were met.

It is more difficult to justify our distinction in treatment between transactions involving "independent companies not owned or controlled by railroads or shippers" and "incorporated car lines owned or controlled by railroads." Both types of companies performed a similar kind of service and both leased their cars to all shippers with no apparent restrictions. On the other hand, it is quite evident from the record that the independent companies had their origin in the neglect or refusal of the railroads to build cars to meet the peculiar requirements of some of the shippers.[20] Since one of the primary objects of this investigation was to trace the responsiveness of railroad buying to transportation needs, it was not thought advisable to include statistics of transactions involving sales to companies which attempted to supply deficiencies in the service which the railroads were rendering.

[19] *ibid.*, p. 662.
[20] *ibid.*, p. 657.

The orders for locomotives and rails which were placed by buyers corresponding to the members of Classes A, C, and D, mentioned above, were likewise separated from the purchases made by the railroads, but orders for these types of equipment occurred much less frequently than those for freight cars. The passenger cars which were built for The Pullman Company (formerly Pullman's Palace Car Company) and by the Wagner Palace Car Company (absorbed by The Pullman Company in 1899) to be leased to railroads were treated as though they had been ordered by the carriers themselves. There seems to be no logical ground for making any distinction here. These cars were, in effect, supplied by the carriers to meet the varying needs of long distance passenger travel, and there is no reason for thinking that the current volume of orders placed in the plants of these builders for this type of equipment to be leased to the roads was out of line with the demands of the roads themselves.

XI. CORRELATION OF ORDERS WITH BUSINESS CONDITIONS

In the following chapters we trace the time relationship between industrial and business conditions on the one hand, and the volume of railroad purchasing on the other hand. In this discussion we have broken the story up by periods of from four to ten years, each period having a certain unity in its business characteristics. To each of these periods we devote a chapter. In this chapter we first trace briefly the course of business activity through the period, then indicate in greater detail the course of railroad purchasing activity through the same period, and finally point out what seems to have been

the relationship between the business situation and the buying activity of the railroads.

The data relative to railroad purchases are shown graphically in each chapter. The figures are shown, in quarterly form, in Appendix A.

For much of the period covered, information regarding general business activity is scanty, and frequently it is difficult to reach a conclusion as to whether a given year or part of a year should be designated as one of declining or advancing business activity. To avoid overloading the text with tedious detail concerning the character of the evidence, we have stated categorically our conclusions as to the course of business in each period, giving the details of the evidence in Appendix B. Readers who are primarily interested in the transportation aspects of our problem will find this Appendix of little interest; those whose primary interest is in the history of business cycles, on the other hand, should read in connection with each chapter, the section of Appendix B which deals with the corresponding period.

Some consideration may be given at this point to the differences in the nature of the indexes used in this study to indicate changes in general business activity and in railroad buying activity, respectively. The former groups are based on bank clearings, the volume of industrial output, the volume of trade, and so on; the latter almost entirely on order statistics. It is theoretically to be expected that an index of orders will make its turn upward and downward somewhat earlier than an index of complete transactions. If this is true our method involves a bias in favor of early recoveries in railroad buying in connection with business revivals and early curtailment of railroad buying activity in times of recession.

It would be easy, however, to give undue weight to such a bias. At the end of a period of depression, when much idle plant capacity was available, when the labor supply was ample and willing, and when railroad facilities were not congested, an increase of output and an expansion of deliveries must, in the case of many industries, have followed very quickly after the receipt of an increased volume of orders.

It is reasonable to assume that a lagging response was more pronounced toward the end of a period of prosperity than toward the end of a period of depression. In the former case many plants were able to run along for some time on old orders. But this could hardly have been true of all plants. It should be remembered that a rise, or a fall, in the curves representing general business activity did not wait on the effects to be derived from the gathering, or lessening, volume of activity in those industries which were tardiest in getting under way.

Entire dependence was never placed on the statistical indexes in determining cyclical turning points at any stage of the study. Considerable weight was always given to the comments appearing in the various trade organs. There is no reason to suppose that these were not as quickly responsive to improvements in one field of industry or commerce as in another.

We conclude that the difference in sensitiveness of our indexes and the business indexes was not a major cause for the tendency of railroad buying to run ahead of changes in the volume of trade. In nearly all the cases where changes in railway buying preceded similar changes in business activity, the interval was too great to be accounted for by any slight bias that may have existed.

We have, therefore, made no allowance in our discussion for the theoretical lag in business and financial data behind order data, except as the trade comment made allowances necessary. That is, speaking broadly, whenever the equipment order curves moved first, it has been assumed that increased railway buying did anticipate improving business conditions. No other procedure seemed to be practicable unless we were to assume arbitrarily a certain lag between industrial and commercial orders and our business indexes, and to assume that trade comment reflected the execution rather than the placement of orders.

CHAPTER III

BOOM AND PANIC, 1870-1873

In 1866 the boom which followed the closing of the Civil War culminated in a severe business reaction. The five years following were in general a period of business stagnation. In 1869 there was an incipient revival but it failed to develop into a sustained prosperity movement, and the seventies opened with a year of distinctly subnormal activity. All through the spring and summer of 1870 there were complaints of dull trade and slow collections, and there were numerous business failures. Improvement came in 1871, especially in the fall, and 1872 was a year of high prosperity. This condition continued until September, 1873. In that month the prosperity wave ended in one of the worst panics in the history of the country.

Let us see to what extent these changes were reflected in the purchasing activity of railways. We shall examine first the market for rails.

I. THE MARKET FOR RAILS

The phase of the railroad industry of these years which has received the major attention of writers is the business of constructing new line. The table on page 38 indicates that the construction of new railway mileage increased in volume each year for eight years after the close of the Civil War. In 1869, 1870, and 1871 successive records were made, but in 1872 and again in 1873 there was a decided decline in the rate of increase of mileage.

Another measure of the activity of the railroad construction industry is furnished by the record of production of rails. This is shown in the second table below.

ANNUAL INCREASE OF RAILWAY MILEAGE IN OPERATION, 1864–1873 [a]

Year	In Thousands of Miles	*As Percentage of Mileage in Operation Previous Year*
1864	0.7	*2.2*
1865	1.0	*3.4*
1866	1.7	*4.8*
1867	2.2	*6.0*
1868	3.0	*7.5*
1869	4.6	*10.9*
1870	6.1	*12.9*
1871	7.4	*13.9*
1872	5.9	*9.7*
1873	4.1	*6.1*

[a] Source: *Poor's Manual of Railroads.*

IRON AND STEEL RAILS, 1867–1873 [a]
(In thousands of long tons)

Year	Production	Imports	Exports	Apparent Consumption [b]
1867	413	146	—	558
1868	452	223	—	676
1869	530	280	—	810
1870	554	356	—	910
1871	693	506	0.2	1,198
1872	893	474	1.0	1,366
1873	795	231	0.3	1,026

[a] Source: American Iron and Steel Association, *Annual Statistical Report*, 1904.

[b] The column headed "apparent consumption" does not measure accurately the tonnage of rails laid in a given year. The figures are based directly on the production data, allowance being made for imports and exports, but not for stocks on hand.

If we may judge from the volume of production, the carriers did not drop out of the rail market in 1872 and 1873 to the extent indicated by the decline in the amount of new line constructed. This may be due to a change in

the proportion of first track and supplementary track. The annual totals for the number of miles of railway operated, include only first main track. Figures are not available covering the mileage of second track and switch tracks until the end of the year 1871, when it amounted to 10,390 miles.[1] Two years later this total had been increased by approximately 3,300 miles. During the same two years 10,000 miles of first track were laid, so it will be seen that the tonnage of rails needed for supplying secondary trackage constituted a substantial proportion of the total output. It is likely, however, that the proportion of secondary track was smaller in the earlier years of this period of high activity.[2]

Comments in current periodicals throw some additional light on the rail situation.[3] The rolling mills were represented as being moderately busy during 1870. The *Bulletin* of the American Iron and Steel Association stated, in January, that the American mills were "generally well supplied with orders." In April it reported everything (in the iron industry) as "almost stagnant" except rails, and in May American mills were said to be well supplied with orders for some time. The autumn

[1] Based on tables in *Poor's Manual of Railroads.*

[2] Editorial in *Railroad Gazette,* April 19, 1873, p. 158. However, the data are puzzling. Even if we assume that no secondary track was laid in 1870 and 1871, the amount of track laid in those years was greater than in 1872 and 1873, while the apparent consumption of rails was nearly 10 per cent less in the earlier period. The difference must be due: (a) to heavier maintenance requirements as the mileage increased; (b) possibly to use of heavier rail.

[3] It is doubtful that the reviews of the rail trade appearing in the *Bulletin* and elsewhere, during the earlier seventies, covered the entire industry to the extent which they do today. There was no "large interest" at that time to which one might look for a reflection of nation-wide conditions but, instead, nearly 60 small independent mills engaged in rolling rails. The trade reports in the *Bulletin* were largely concerned with the New York, Philadelphia, Pittsburgh, and Cleveland markets, with increasing references to St. Louis and Chicago.

reports expressed much anxiety regarding winter work, and in December reports from Philadelphia and New York were rather unsatisfactory.

The rail trade continued dull during the early months of 1871, but beginning with June there was a marked change in the character of the reports. The remarks in the *Bulletin* were all to the effect that the rail mills were "filled up for some time to come," or that "American mills are not seeking orders."[4] Similar comments continued throughout the year.

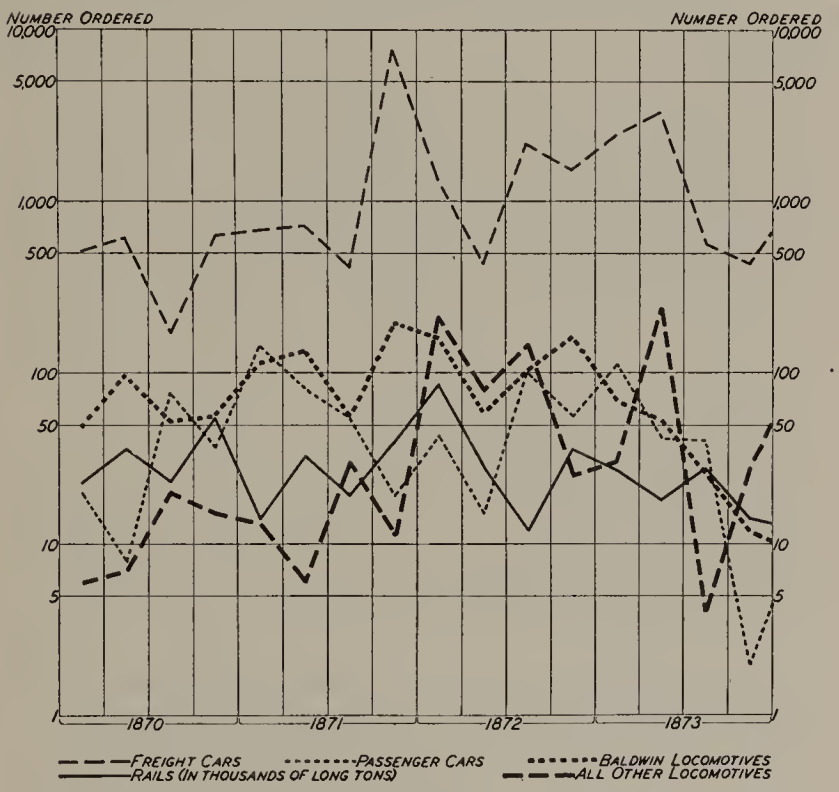
In January, 1872, the *Iron Age* said: "The market [iron] is more excited than we remember to have seen it," a comment which may not have been inspired entirely by rail buying, however. Calling attention to the sharp advance in rail prices, which began about March, 1872, the same periodical said: "Buyers, becoming convinced that further delay was only making matters worse, have entered the market freely and in consequence prices have made another material rise." In April it was stated that the mills were full of orders for some time ahead.

Beginning with the late spring of 1872 the whole situation appears to have changed, so far as new business was concerned. For week after week the *Iron Age* re-

[4] Steel rail prices turned upward in the spring of 1871, as is shown in the table on p. 232. The persistent decline of both iron and steel rail prices until that time in the face of the growing requirements of the railroads is probably accounted for in part by the lowered cost of production that accompanied larger output. See Van Metre, T. W., *Economic History of the United States,* 1921, p. 397. Another factor was the competition of English rails. "The greater relative cheapness of these rails is very tempting to railroad companies" Bigelow and Johnston's *Annual Report* for 1871, quoted in *Railroad Gazette,* January 13, 1872, p. 13. Furthermore, domestic competition was growing. In the report just quoted, reference was made to the construction of a number of new American rolling mills.

ported the market, for both English and American rails, as " weak," " quiet," " dull." Prices were described as " nominal " or " nominally unchanged," with an occasional small order at " private terms." On December 12, American rails were said to be in " better request,"

RAILWAY EQUIPMENT ORDERS, BY QUARTERS, 1870-1873



but such a report was unusual. The following week English rails were " dull " with prices " wholly nominal," and American rails were " also quiet and nominal."

The new year brought no improvement in the tone of the reports. The market was " inactive and without reported movement," and prices continued " nominal." During March, there appeared to be a slight improve-

ment, but in its issue of May 8, 1873, the *Iron Age* declared: "The demand for new rails continues exceedingly light and we do not hear of any important transactions. . . ." [5] On May 27, the *Commercial Review*, [6] Cleveland, referring to conditions in that vicinity, called attention to ". . . the fact of their [the rail mills] being now either wholly shut down or running only at partial capacity." Three weeks later the *Iron Age* stated that there had occurred a "general suspension of railroad building" owing to the inability of the roads to market their seeurities. Similar reports of inaetive markets continued to be made throughout the summer and fall. Immediately after the panie, in its issue of September 25, the *Iron Age* stated that "many existing contracts for rails and rolling stocks have been already caneelled."

As is noted elsewhere [7] the data covering rail orders for the early years of the 'seventies are too scanty to be given much weight. But such as they are, they agree with other data in pointing to a tendency for orders to fall off after the spring of 1872.

The quoted prices of rails give an impression quite different from that conveyed by the trade reports. Quotations rose sharply during the first half of 1872, as the table on page 232 indicates, and continued to move upward in the early months of 1873. It was the eontention of the trade reviews that the rise was due in large part to the activities of speculators and was responsible for the decrease in the volume of rail pur-

[5] Quoted in *The Bulletin* of the American Iron and Steel Association, May 14, 1873, p. 294.
[6] Quoted in *The Bulletin* of the American Iron and Steel Association, June 4, 1873, p. 320.
[7] p. 22.

chases.[8] Bigelow and Johnston, in their *Annual Review* of 1872 said: "Business in iron rails has for some months been slow and dragging in character, partly owing to the inability of some and the unwillingness of others to follow the advance in prices."[9] Editorials appearing in the *Iron Age* were more emphatic than this in calling attention to the depressing effects of too high prices.[10]

It appears that the quoted prices of rails do not offer very helpful evidence relative to the amount of new orders the rolling mills were placing on their books. The quotations fail to reflect the lessening activity of the early months of 1873, and even as late as December of that year were only $2.50 a ton lower than the peak reached the preceding March.

Another clue to the changing volume of rail purchases lies in the import figures. As the table on page 44 shows, the rails which were bought abroad made up a very large proportion of those that were laid during the period under review.[11] The statistics given below indicate the extent to which sales of foreign rails to American roads dropped off after the summer of 1872.

[8] Similar expressions of opinion appeared in the reviews of English origin quoted in the *Bulletin*.

[9] Quoted in *Iron Age*, January 16, 1873, p. 11.

[10] See issue of January 2, 1873, p. 16.

[11] Judging from the amount of space in the *Bulletin* given over to a consideration of industrial conditions in England, Scotland, and Wales, one would suppose that the iron trade in this country looked across the water for direction and for the bulk of its raw materials. A cause contributing to this attitude is implied in the statement from a report issued by Bigelow and Johnston: "But even were foreign rails higher than American, they will continue to be largely taken, so long as we must lean on the foreign capitalist for the means of construction to so large an extent as we now do." Quoted in *Railroad Gazette*, January 13, 1872, p. 13.

IMPORTS OF RAILS, BY QUARTERS, 1870-1873

(In thousands of gross tons)

Quarters	1870	1871	1872	1873
1st	47	90	72	70
2nd	92	150	190	81
3rd	116	138	108	50
4th	101	127	99	31

II. LOCOMOTIVES

Our reports of orders for rolling stock are obviously fragmentary for these early years, and there are no data corresponding to the new mileage and rail production figures nor to the average monthly prices of rails, which might be used to supplement them.[12] However, the information is complete regarding the number of locomotives ordered by domestic buyers from the largest builder, the Baldwin Locomotive Works.[12] The data for certain years are as follows:

1869	
1st quarter	5
2nd quarter	8
3rd quarter	0
4th quarter	35
Total	48
1870	
1st quarter	49
2nd quarter	96
3rd quarter	52
4th quarter	56
Total	253
1871	
1st quarter	112
2nd quarter	133
3rd quarter	55
4th quarter	197
Total	497
1872	
1st quarter	160
2nd quarter	58
3rd quarter	102
4th quarter	161
Total	481
1873	
1st quarter	68
2nd quarter	53
3rd quarter	26
4th quarter	12
Total	159

The marked increase in the volume of purchases from this company which began in the fourth quarter of

[12] See Appendix, p. 227, for Baldwin orders, 1870-1900.

1869 is very apparent. The following year showed a very large increase in orders, and its total was almost doubled in 1871. This high level was well maintained in 1872, but the flow of orders began to fall off very markedly in the first quarter of 1873, its aggregate of orders being less than one-half of those received in the first quarter of 1872. The records of the three following quarters were successively the smallest in four years.

If variations in the volume of business of this company were typical of the business of all builders of locomotives, a marked increase in buying activity preceded by several months the upturn of trade and industry which took place in 1871. Likewise, in 1873, the volume of orders for locomotives declined an appreciable length of time before the termination of general prosperity, which did not occur until the fall of the year.

The admittedly inadequate data covering orders received by builders other than the Baldwin Locomotive Works agree, in the main, with the trend noted in the preceding paragraph. An outstanding exception is the upturn of orders during the second quarter of 1873. However, the monthly data show that of the 237 locomotives credited to that quarter, 225 were ordered in April, indicating an almost entire lack of orders after the early spring.

III. CARS

No effort was made to compile orders for cars for any year prior to 1870; hence we have no standard with which to compare the scattering figures reported for 1870. But evidence of favorable development among the car builders was furnished by some of the trade reports. Notices of the formation of three new corpora-

tions to manufacture cars and wheels appeared during the last six months of 1870, and in its December issue the *National Car Builder* reported that the car works throughout the country were "employing more hands than ever before," and that they were "overstocked with orders." This branch of the railway equipment industry seems, like others, to have experienced a revival in 1870.

Activity became more intense in the following years. The *National Car Builder* stated in January, 1872, that "the wonderful amount of freight traffic now presented to the railways is the most astonishing feature of the late development of the country. Almost every road is called upon for more service than it can perform, and all of them are increasing their facilities with greater rapidity than ever before." In December of the same year appeared the news that the car builders were "six months in arrears with their orders." Other evidence of the unprecedented activity in the market for railway cars was furnished by the numerous new companies which were incorporating or building and by the many established concerns which were enlarging their plants. Nearly every issue of the trade organs contained a reference to developments in one or all of these directions. Nor did this process of increasing car building facilities cease with the new year. Many additional concerns continued to enter the field, month by month,[13] and the old

[13] "During this period [the past 18 months] not less than 30 new car companies have been formed in various parts of the country on the basis of a prospective demand for rolling stock equal to the preceding year, with the additional ratio of increase corresponding with the annual increase of railroad construction." *National Car Builder,* September, 1873, p. 222.

ones reported constant growth in size. This was true even up to and beyond the month in which the panic occurred.[14]

The volume of orders for new cars slackened markedly during the second quarter of 1873. Making full allowances for the incompleteness of the statistics, it still seems clear that the railroads stayed in this market longer than in that for any other type of equipment, but that they withdrew at least three months before the panic broke.

An examination of the period from 1870 to 1873 leads to the conclusion that heightened activity occurred among the carriers both in the constructing of new mileage and in the purchasing of new equipment before it became evident in other major fields of industry, and similarly that general business continued in an apparently prosperous condition for some months after the time when there occurred a decided falling off in the rate of railway construction and buying.

[14] However, it needs to be said that in 1873 there were few, if any, references to an inability on the part of the car building companies to fill current orders being received, which was so pronounced a feature of the comments of the two previous years. It seems pretty clear that the railway car builders were overshooting their mark.

CHAPTER IV

PERSISTENT DEPRESSION, 1874-1879

After the panic of September, 1873, the United States entered a period of depression that was destined to be of long duration and great severity. Falling commodity prices, growing numbers of unemployed, extraordinary caution on the part of investors and borrowers alike, silent factories, and a slow turnover of goods were characteristic of the time. Financial writers were puzzled by the persistence of the depression. Responsibility for prevailing conditions was placed on the currency situation, on the railroads, on the stagnation of trade abroad, and on the unwillingness of business men to show a proper degree of initiative and courage. First one and then another, beginning as early as the spring of 1874, issued confident predictions that recovery was just around the corner, but business remained unresponsive.

No improvement was noted in 1875 or in 1876. In an oft-quoted statement, the *Annual Report* of the American Iron and Steel Association remarked that if the rate of decrease in the output of pig iron which prevailed from 1873 to 1876 were to continue, "the production of pig iron would entirely cease in 1884, less than eight years from the present time, and our furnace stacks would be useful only as observatories for the study of astronomy."[1] During 1876 numerous banks began to

[1] June, 1877.

reduce their capital, in order to cut expenses and return as much as possible to the stockholders before everything was lost.[2]

The year 1877 did witness an appreciable improvement in certain agricultural sections of the country as well as in the mining regions of the Pacific Coast, but these favorable developments were not reflected in the nation's business as a whole. In the second half of 1878 a few industries began to show improvement, but reports from most of them were unfavorable throughout the year and well into 1879. On March 6, 1879, the *Chronicle* said: "We have now entered upon our third month since the resumption of specie payments. 'Where is the prosperity the *Chronicle* promised with that event?' is the question frequently coming to us from certain points in the interior. 'Wheat is no higher. Cotton is no higher. There is no money in any of the earth's products. Where is your promised prosperity?'"[3] In the late spring or early summer, however, business activity unmistakably revived, the outstanding laggard being the iron and steel industry. In so far as is possible to fix a specific date as the turning point, the month of April perhaps most nearly approximates the time at which the upswing commenced. Statistical data and trade comment alike point to an increase in the volume of transactions about that time which gained momentum throughout the summer.

The revival of business in the fall of 1879 was accompanied by and closely associated with a remarkable

[2] *Bankers' Magazine*, January, 1877, p. 71. The reports of the Comptroller of the Treasury show that the aggregate capital stock of all the national banks declined from a total of 505 million dollars in December, 1875, to 454 million dollars in October, 1879.

[3] p. 235.

improvement in the status of agrieulture. Record-breaking erops in this eountry eame at a time when the grain erops in Europe were the smallest in generations and when India was suffering from a partial failure of her eotton erop.[4] That the extraordinarily favorable developments in the farming seetions of the eountry provided an added stimulus to improving business conditions there ean be no question. But the position sometimes taken, that the business recovery was eaused by the exeellent crops and high agricultural priees of 1879, is exaggerated. A marked revival of business oeeurred before the erops were harvested; indeed before the results of the harvests were foreseen.

I. RAILWAY BUYING AND CONSTRUCTION ACTIVITY

The panic of September, 1873, was speedily refleeted in the railroad equipment industries. As has been pointed out, orders for equipment of every type had begun falling off several months before the break oeeurred. The eurtailment of aetivity became mueh more pronouneed after September. Only twelve orders for loeomotives were plaeed with the Baldwin Loeomotive Works in the fourth quarter, eompared with 161 during the eorresponding period in 1872. Likewise, the volume of purehases of freight ears, passenger ears, and rails refleeted a sharp deerease in demand.

The news items no longer related to plant extensions and the formation of new equipment eompanies, but to eaneelled orders, reduced forees, and elosed plants. In

[4] A vivid description of the disasters which overcame the European farmers may be found in Noyes, A. D., *Forty Years of American Finance*, 1909, pp. 56-57.

a single issue, the *Railway Gazette* reported that the Dickson Locomotive Works had reduced its labor force 25 per cent; that the Ohio Falls Car Company, employing 700 men, had stopped all work except in the foundry; and that the Tredgar Car Company and the Southwestern Car Company had each discharged a large number of men.[5] The following week the Danforth Locomotive Works reported that instead of releasing any of its men it had cut the working time in its shops to seven hours, on the theory that it could thereby hold its men together until the end of the depression.[6] Similar items occurred with great frequency through November and December.

The builders suffered severely not only on account of cancellations of orders for equipment not yet constructed [7] but from the refusal or inability of railroads to accept or pay for rolling stock ready for delivery. For example, in November it was reported that the Cummings Car Works was itself obliged to suspend payment because of the failure of the New York and Oswego Railroad to pay for a number of cars built for them.[8] Gilbert Bush and Company, car manufacturers, were obliged to close, because they had on hand $240,000

[5] October 18, 1873, p. 428.

[6] *Railroad Gazette,* October 25, 1873, p. 436.

[7] R. H. Sanford, Librarian of the Baldwin Locomotive Works, who was in the employ of that company as early as the middle seventies, told the writer that in those days it was customary to place orders as far ahead as a year or eighteen months before delivery was expected, thus giving the carrier so ordering a preferred position on the builder's books. Ordinarily specifications were not included with these "orders," but were filled later in plenty of time to meet the requirements of the builder in case the order was not countermanded or cancelled. In adverse times ostensible orders disappeared from the books of the manufacturing concerns very rapidly.

[8] *Railroad Gazette,* November 8, 1873, p. 456.

worth of cars which had been ordered by the Canadian Southern and by certain South American railroads, but which were not to be taken off their hands.[9]

Several of the locomotive builders who had closed their plants in 1873 resumed operations in the early spring of 1874, the Dickson Locomotive Works even restoring a 10 per cent cut in wages.[10] But by midsummer most of the plants which had attempted to resume operations had again shut down. Few of the car manufacturing companies and the rolling mills even attemped to reopen.

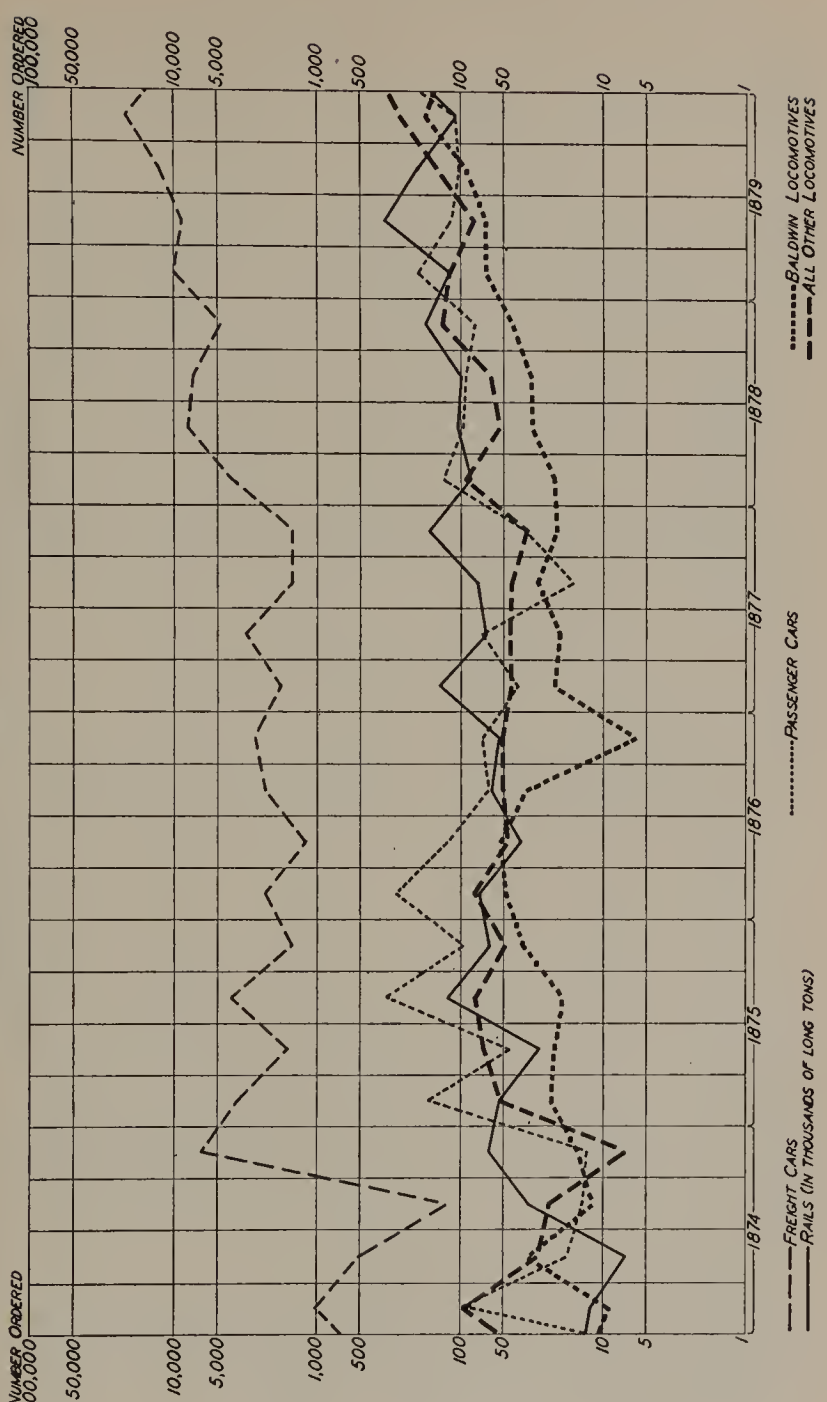
In the whole of 1874 the Baldwin Locomotive Works received scarcely more orders than during the first quarter of 1873, which was by no means a period of good business. The Schenectady Locomotive Works manufactured eight locomotives in 1874; in the previous year the number had been 112. The increase in volume of orders which occurred in the last quarter of 1874 was of no permanent significance.

While the amount of new line constructed fell from 4,097 miles in 1873 to 2,117 miles in 1874 it was the rigid economy practiced by the established railroad companies rather than inactivity among the promoters of new railways that was held to be chiefly responsible for the plight of the equipment manufacturers.

The decline in new construction, however, has not been nearly so serious a matter for railroad manufacturers as the extreme economy of the roads in operations. Probably the average wear of rails on the railroads of this country is equivalent to 10,000 miles of track—a third more than was ever built in one year. So of rolling stock and most kinds of materials and supplies, the great consumers are the roads in operation, not those in con-

[9] *ibid.*, Nov. 1, 1873.
[10] *Railroad Gazette,* March 28, 1874, p. 115.

PERSISTENT DEPRESSION, 1874-1879



struction. Now aside from the decreased wear in consequence of the falling off in traffic the greater falling off in income has made the companies quite generally put off purchase till the last moment. . . . .[11]

1875-1877. The story of the following three years as told by the trade reports is much like that of 1874. First one equipment concern and then another engaged in a valiant struggle to " resume," but as a rule the attempts were short-lived and the plants were closed entirely or reduced to an extremely low schedule of operations. In some instances they contrived to remain open by doing a large repair business;[12] in others they branched out into the manufacture of other lines of products, such as silk and cotton machinery or bridges or nails;[13] while many were entirely dependent on foreign orders.[14]

As late as April, 1877, it was stated by Mr. John Cooke, President of the Danforth Locomotive and Machine Works, that while the aggregate annual capacity of all locomotive builders, aside from the railroad shops, was over 2,000 engines, the total number of orders on the books on April 1, 1877, was only 78.[15] In December the *Railway World* said: " They [the locomotive plants] have been, during the fall, doing considerable building of locomotives for these times, but mostly all on old orders that were given before the panic and countermanded." [16]

The small volume of orders for railroad equipment that was reported to have been placed by the railroads

[11] *Railroad Gazette,* December 26, 1874, p. 505.
[12] *Railroad Gazette,* June 6, 1874, p. 217.
[13] *ibid.,* July 24, 1875, p. 308; October 2, 1875, p. 409; February 13, 1875, p. 67; February 25, 1875.
[14] *ibid.,* July 24, 1875, p. 308; and August 14, 1875, p. 339.
[15] *Railroad Gazette,* April 18, 1877, p. 220.
[16] December 15, 1877, p. 1190.

during 1875, 1876, and 1877, corroborates the impression of very dull business one receives on reading the

RAIL STATISTICS, 1874–1880 [a]

(In thousands of gross tons)

Year	Production	Imports	Exports	Apparent Consumption
1874.....	651	97.0	1.0	747
1875.....	708	17.0	1.0	724
1876.....	785	0.3	3.0	782
1877.....	683	0.03	7.0	676
1878.....	788	0.009	8.0	780
1879.....	994	39.0	3.0	1,030
1880.....	1,305	260.0	1.0	1,564

[a] Source: American Iron and Steel Association, *Annual Statistical Report*, 1904.

RAILROAD CONSTRUCTION [a]

(In thousands of miles)

Year	Line in Operation	Increase	
		In Line	In All Track
1874.....	72	2.1	4.4
1875.....	74	1.7	4.5
1876.....	77	2.7	5.8
1877.....	79	2.3	2.6
1878.....	82	2.7	3.3
1879.....	87	4.8	4.1
1880.....	93	6.7	10.9

[a] Source: *Poor's Manual of Railroads.*

[b] Note: The column headed, "Increase in all Track" in this and later tables is presumed to include first track, second track, yard track, sidings and so on. In other words, it represents the annual increases in mileage of rails of additional track of all types. Occasionally, it shows a smaller increase than the increase in the number of miles of main line alone. The apparent error is not accounted for in the *Manual.*

comments in the trade publications. There is no evidence of a genuine recovery of business in any of these years. Of the three years, 1875 appears to have been the

most active, showing a slightly larger total of orders in each of the three types of rolling stock than any of the other years.

The statistics of rail orders indicate, on the contrary, that more rails were ordered in each successive year after 1873, with the exception of 1876. The first table on page 55 likewise indicates an increasing output each year, with the exception of 1877. The falling off in production in 1877 corresponds to the curtailment of orders in the previous year.

This demand did not arise from new construction. The second table on page 55 shows that the amount of new mileage built in 1878 was only slightly more than that built in 1874, and the number of miles of all track laid was somewhat less. The reasonable assumption must be that as the depression period wore along, the railroads were compelled to a greater and greater extent to buy material for replacement purposes, and it was this demand that led to the increasing output of rails.[17]

1878. In this year there was distinct evidence of greatly increased activity in both rolling stock and rail markets. In the case of freight cars the improvement appeared as early as the first quarter of the year. Rail buying received a considerable impetus in the fall, and locomotive orders showed a large gain in the last quarter of the year. The volume of orders for passenger cars picked up remarkably in the first quarter of 1878 and maintained a fairly high level of activity during the balance of the year, but buying was not as well sustained as in the case of locomotives and freight cars.

[17] See page 52 for statement quoted from the *Railroad Gazette.*

The marked increase in orders for locomotives which occurred in the fourth quarter of 1878 was especially significant in that the experience of the previous four years had pointed to declining purchases at that time of the year. The following condensed table will serve to indicate the genuineness of the revival which occurred in the last part of 1878.

The trade reports of the rolling stock industries contained many encouraging items. As early as March, 1878, the Mason Car Manufacturing Company an-

ORDERS FOR LOCOMOTIVES, BY HALF-YEARS

Year	Period	Number	Year	Period	Number
1876	First six months	230	1878	First six months	199
	Second six months	142		Second six months	271
1877	First six months	131	1879	First six months	333
	Second six months	128		Second six months	665

nounced that it had on hand contracts for as many cars as were built during the preceding year.[18] The following July the car works of Gilbert, Bush and Company were said to be "full of work,"[19] and the Schenectady Locomotive Works increased its force.[20] In August the Ohio Falls Car Company made a considerable addition to its labor force, and in the same month the Hinkley Locomotive Works added 100 hands.[21] The business of the three locomotive works then located at Paterson, New Jersey, was very much larger in 1878 than it had been for several years, the number of locomotives "shipped"

[18] *Railroad Gazette,* Mareh 29, 1878.
[19] *ibid.,* July 12, 1878, p. 352.
[20] *ibid.,* July 19, 1878, p. 357.
[21] *Iron Age,* August 8, 1878, p. 18.

annually from these shops for four years being as follows:[22]

1875	42	1877	18
1876	29	1878	112

The rail industry likewise enjoyed a recovery in 1878. With the exception of the first, each quarter showed an increase in volume over corresponding quarters of the preceding year, and, with few exceptions, for a great many years. The production of rails increased more than 100,000 tons over the previous year, making it the largest since 1873. Trade reports in 1878 were uniformly glowing. In July and in August the *Bulletin* of the American Iron and Steel Association announced that the demand for steel rails continued in excess of the capacity of the mills to supply. In the following October the *Iron Age* said: "Some of the most encouraging features in the iron trade at the present moment are found in connection with the railroads of the country. . . . All the Bessemer steel mills are busy with the single exception of one not in operation, and are full of orders. . . . Everything warrants the belief that from this time on the railroads will be larger and more liberal customers of iron than they have been at any time during the past five years."[23] This activity persisted through the remainder of the year, for as late as December 12, the *Iron Age* was able to say: "In very pleasant contrast to the gloom which prevails generally in the iron trade is the continued active demand for steel rails," and in this same month the *Bulletin* estimated that rolling mills had orders on their books for 200,000 tons of rails for 1879 delivery.

[22] *Railroad Gazette,* February 28, 1879, p. 119.
[23] October 31, 1878.

1879. With the coming of the new year activity in the iron trade became still more intense. During the first two quarters 455,000 tons of rails were ordered, as against 190,000 tons during the corresponding period in 1878. Furthermore, for the first time in almost four years, the importation of rails was renewed. This commenced in an appreciable amount in the third quarter and rapidly attained large proportions in the following year.

The sharp drop in the volume of orders in the second quarter of 1879, the rapid rise in prices,[24] and the beginning of rail importations a little later may have a common explanation, in part at least, in the overcrowded condition of many of the larger rolling mills. As early as February it was reported that some of the mills were sold out for the season and were declining orders.[25] On March 6, the *Railway Age* announced that the Edgar Thompson works were sold out for a year ahead, and in June the *Railroad Gazette* stated that sales of rails were light because the mills were too full of work to take new orders except for future delivery.[26] The following month the *Boston Commercial Bulletin* said: "It is doubtful whether any general knowledge prevails as yet, outside those interests which are immediately concerned, of the immense extent to which activity in railroad building has been resumed throughout the country during the present year. Manufacturers of railroad supplies . . . have become quite accustomed to finding upon their books orders which cannot possibly be filled for six months. It was reported last week . . . that a single

[24] See page 232.
[25] *Railroad Gazette,* February 28, 1879, p. 119.
[26] June 6, 1879, p. 318.

Western mill had orders booked for 115,000 tons of iron and steel rails, which would be sufficient to lay more than 1,000 miles of track. This alone would be more than half as large as the entire mileage shown in any previous year since the panic." [27] Similar reports occurred in succeeding months, the Union Pacific Railroad even declaring that it was unable to secure 150 miles of rails for the line it was constructing to Salt Lake City.[28] But at this same time, while our mills were "running night and day," the English mills were reported as being in a state of "terrible depression." [29] Apparently it was a good time to turn to foreign markets.

The aggregate of orders received, quarter by quarter, during 1879 by the builders of rolling stock reveals clearly that the industries concerned were experiencing a revival of growing intensity with the possible exception of the plants manufacturing passenger cars. In the latter part of the year the movement took on the characteristics of a "boom."

The trade reports confirm the picture of improvement in the rolling stock industries through 1879. On January 3, the *Railroad Gazette* stated that the Pittsburgh Car Works were running on full time again. The Harrisburg Car Company was obliged to reduce its labor force in January,[30] but in May its shops were said to be full of work.[31] In February, also, the car works of H. T. and J. N. Keith, at West Sandwich, Mass., were reported to be in full operation.[32] As early summer ap-

[27] Quoted in *Railway Age*, July 24, 1879, p. 355.
[28] *Railway Age*, September 18, 1879, p. 450.
[29] *ibid.*, August 14, 1879, p. 386.
[30] *Railway Age*, January 16, 1879, p. 36.
[31] *ibid.*, May 30, 1879, p. 301.
[32] *ibid.*, February 14, 1879, p. 89.

proached the reports became even more favorable. In April the locomotive builders were said to be "unusually full of work, some of them having orders enough to keep them employed several months," [33] and the St. Paul shops were reported to be working the men 15 hours a day.[34] By June the three Paterson locomotive works had already delivered twice as many locomotives as they had in 1878 on the same date,[35] and in that and succeeding months the periodicals were full of announcements of plants "resuming," mills working overtime, car building concerns with work for six months ahead, and various establishments declining new business. A typical item appeared in the *Chicago Railway Review*: "The New Haven manufacturers cannot get enough hands to do their work, and some of them are so busy that they have to refuse orders that come to them. One concern recently refused a $40,000 order from Russia for 140 platforms cars to be fitted with oil tanks as they had too much work on hand." [36]

II. PRICES

The available price data regarding railroad equipment for the period from 1874 to 1879 consist mostly of steel rail prices.[37] The upward movement of prices in this field lagged behind the upward trend of production by several months. In spite of the decided increase of demand on the rolling mills in the late fall of 1878, the price of steel rails moved downward until May, 1879, although there had been a temporary stiffening the pre-

[33] *ibid.*, April 3, 1879, p. 162.
[34] *Railway Age*, April 24, 1879, p. 204.
[35] *Railroad Gazette*, June 13, 1879, p. 329.
[36] August 9, 1879.
[37] Table of steel rail prices appears on pp. 232, 233.

vious spring. It will be recalled that a similar lag of steel rail prices characterized the recovery stage eight years before. When the rise began it proceeded at a rapid rate, the quoted price more than doubling in nine months, reaching a top figure of $85 a ton in February, 1880. The beginning of the rise of prices in 1879 seems to date from the time when frequent reports began to appear of mills having reached a point where they were working to full capacity and with order books full of orders.

A similar tendency for an upward movement of prices to lag behind rising schedules of production in the rolling stock industries is disclosed in an article appearing in the *Chicago Railway Review* in June, 1879, from which the following extract is taken:

> While it is evident that builders are hard at work, employing a full complement of men and turning out engines in unwonted numbers, they complain of the low prices received, both for engines and cars. This is mainly accounted for by the sharpness of competition, rival establishments putting in bids at prices which, in former years, would have been considered ruinous; but if cost can be realized, contracts are made without hesitation. Some of the best engines are now made for $6,500, such as would have cost $14,000 before the panic. As remarked by one gentleman representing a large concern, "Cars are fearfully low—good box cars of the same kind made before the war for $650, bringing now about $400." A partial explanation of the general low price of engines is afforded by the present low price of labor and raw materials.[38]

It seems clear that, in the period being reviewed, the date of a revival in the railway equipment industries cannot be gauged by the time that prices reversed their trend. The builders maintained relatively low prices even after the flow of incoming orders had increased

[38] June 21, 1879, p. 277.

very materially. The primary aim seems to have been to place a sufficient amount of business on the books to enable the plants to operate at full capacity. Then, when quantity production for some months to come had been assured, the manufacturers felt free to boost prices. Consequently, there was a considerable lag between the time when business began to expand markedly and the time when prices were advanced.

III. CONCLUSIONS

For nearly six years following the panic of September, 1873, business in this country was characterized by great depression in all lines of trade and activity. This period of relative inactivity was brought to a close with the revival in trade and industry beginning about April, 1879, the business revival having been preceded by two years of improving agricultural conditions. A remarkably quick recovery was made and the United States was soon experieneing a condition of extraordinary prosperity.

Railroad buying and railway construction were of very small volume throughout most of this period, the lowest degree of activity being reached in 1877. The enormous harvests of that year, with the consequent increase of freight traffic both eastward and westward, possibly acted as a stimulus to railroad purchasing. Probably the necessity of replacing worn-out equipment was also a causal factor. At any rate the volume of freight car and passenger car purchasing increased very materially in the first quarter of 1878. In the third quarter, rails began to be purchased in much larger quantities than previously, and in the final quarter of the year an unmistakable revival occurred in the locomotive mar-

kets. The following year the roads bought even more freely, and by early fall the manufacturers of both rails and rolling stock were enjoying great prosperity. It is clear then, that in the cyclical upswing of the later seventies, the railroads' reëntrance into the market as purchasers preceded, by a considerable margin, the revival of business generally.

CHAPTER V

HIGH PROSPERITY AND SLOW RECESSION—1880-1886

Major changes in industrial and commercial activity during the seven years subsequent to the rapid recovery of 1879 may be summarized very briefly as follows: The boom which began in the last quarter of 1879 continued through 1880 and the first part of 1881, constituting one of the most remarkable business expansions in our history. The peak of activity was reached in the summer of 1881, but for a year the decline was so very gradual that its existence was hardly recognized. Not until the last quarter of 1882 did business activity fall below a high prosperity level. The year 1883 was a period of recession. Business activity slackened, prices, both of stocks and commodities, declined, and there was an absence of confidence in the future. The decline continued in the following year, and 1884 was a year of distinctly subnormal activity. The level of security prices reached bottom in the stock market panic of May, 1884, and recovered rather rapidly thereafter, but commerce and industry became more and more quiet. Failures were numerous, mills and factories were closed, and reduction in wages became frequent.

Business revived to some extent in 1885, though the year was not a good one. The low point of business activity was probably reached in the spring, but it was not until the late spring of 1886 that a conspicuous revival got under way. The last seven months of 1886 witnessed a rapid expansion of activity.

I. RAILWAY CONSTRUCTION AND THE BUYING OF RAIL

Activity in the building of railroads reached its highest level for this period in 1881, when the total amount of steam railroad trackage was increased by nearly 15,000 miles. In the following years construction decreased steadily until 1885, when only 4,000 miles of new track were laid. In 1886, however, the mileage rose to about 7,500. The consumption of rails, year by year showed the same trend. The orders for rails showed approximately the same succession of changes, but this series tended to precede the movements of the other two sets of data. For example, more rails were ordered in 1880 than in 1881, the declining tendency beginning in the latter year. In 1882 the rolling mills were suffering long before there was a pronounced slackening in most other industries. This is substantiated by the data on orders, the monthly price quotations of Bessemer steel rails,[1] and remarks in trade organs. As early as the first months of 1882, the year in which the greatest number of miles of new line were built, there came complaints of weakening prices. The sharp drop in the curve representing rail orders, which had then been uninterrupted for six months, is a sufficient explanation. As early as June it was reported that 36 rolling mills surrounding Pittsburgh, and employing 18,500 men, had

[1] See p. 232. It is likely too that the published average prices, reproduced in the table, are higher than those which formed the basis of current contracts. Somewhat later the *Iron Age* commented in part as follows: "There is no article more difficult to report than steel rails, transactions in which are almost exclusively between manufacturers and the railways direct. To outsiders $28 to $30 is named, but to those known as cash buyers it is usual to name special and confidential rates." August 26, 1885.

quenched their fires.[2] By the end of the year prices were declared to be at the lowest point possible.

There was a sudden rise in the volume of rail orders reported during the last quarter of 1883, followed by a relapse into inactivity. This is a puzzling phenomenon. There seems to be no question as to the genuineness of these orders, the individual items appearing in the *Bulletin* for the most part, but the published reports must have included a much larger proportion of the orders actually placed than was usually the case. On December 22 the *Age of Steel* reported that "large companies" had accepted orders for 375,000 tons of rails for 1884, and in the following week it further announced that contracts for next year's delivery of rails amounted to from 500,000 to 750,000 tons. It will be recalled that it was customary for the roads to place orders and later file specifications as the need for new stock arose. Purchases fell off much more, relatively, during the next five or six quarters than did production. Actual production in 1884 was over a million tons; and in 1885 it was over 900,000 tons.

There was a marked expansion in the volume of rail purchasing in 1885, evidently in anticipation of the increased building program of 1886. This tendency for increases in orders in rails to precede increases in their production and in the rate of railway construction, was of course to be expected, in view of the custom of concentrating orders for rails in the late fall preceding the year in which deliveries were expected.

The data on rail imports do not add greatly to our understanding of the situation.[3] Perhaps of chief inter-

[2] *Railway Age,* June 8, 1882, p. 315.
[3] See table on p. 68.

est is the fact that they show a large increase in the early spring of 1886, which is in harmony with the increased volume of purchase orders reported for 1885.

RAIL STATISTICS, 1880–1886 [a]

(In thousands of gross tons)

Year	Production	Imports	Exports	Apparent Consumption
1879.....	994	39	3.0	1,030
1880..	1,305	260	1.0	1,564
1881.....	1,647	345	0.6	1,991
1882.....	1,508	200	3.0	1,705
1883.....	1,215	35	2.0	1,247
1884.....	1,022	3	6.0	1,019
1885.....	977	2	8.0	971
1886.....	1,601	42	3.0	1,639

[a] American Iron and Steel Association, *Annual Statistical Report*, 1904.

RAILROAD CONSTRUCTION, 1880–1886 [a]

(In thousands of miles)

Year	Line in Operation	Increase	
		In Line	In All Track
1879.....	87	4.8	4.1
1880.....	93	6.7	10.9
1881.....	103	9.8	14.8
1882.....	115	11.6	10.4
1883.....	121	6.7	8.2
1884.....	125	3.9	7.3
1885.....	128	3.0	4.1
1886.....	136	8.0	7.4

[a] *Poor's Manual of Railroads.*

II. PURCHASES OF ROLLING STOCK

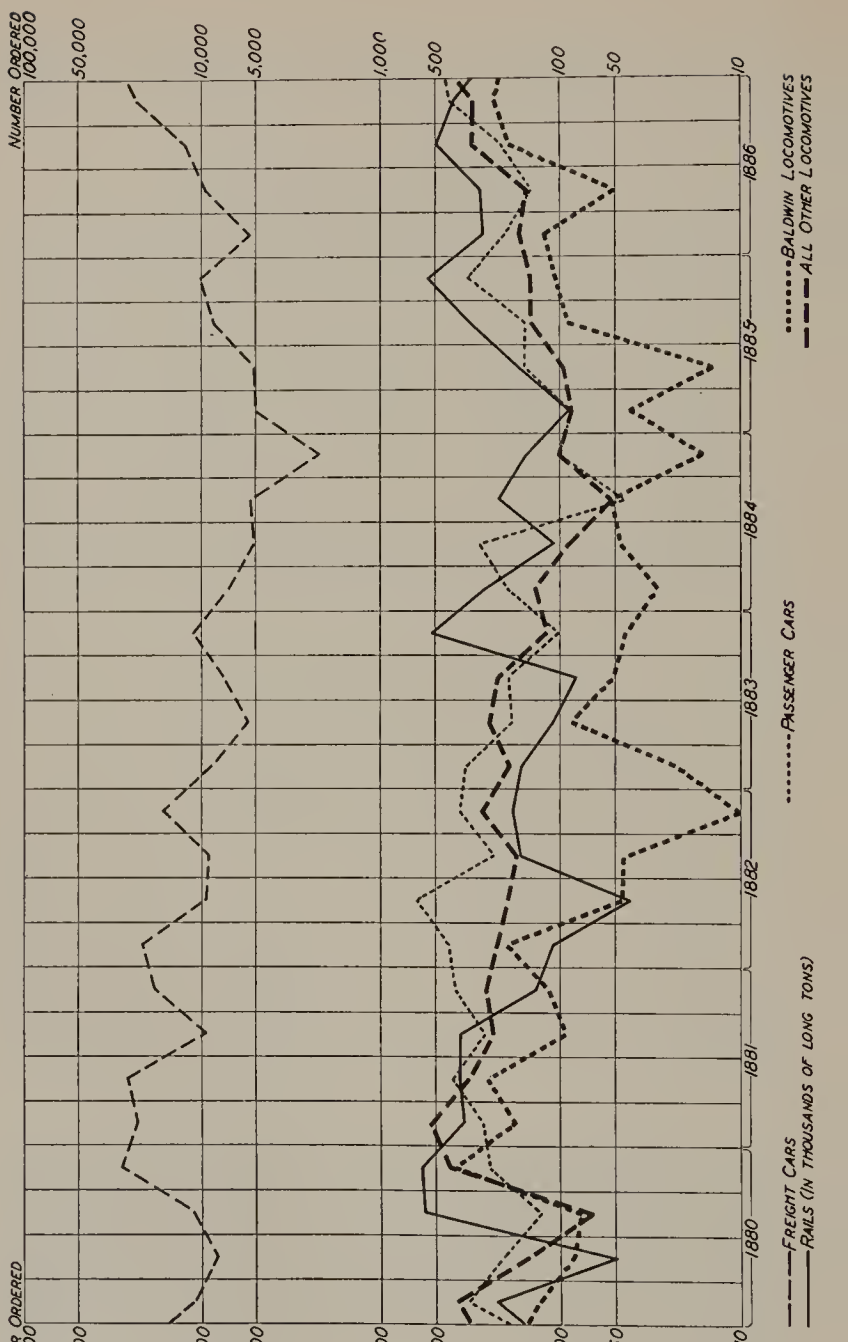
1880. Probably the most striking feature of the movements of the curves representing railroad equipment orders during 1880 is the manner in which each curve dips sharply and then recovers, attaining new high ground before the year is over. They do not move quite

together, freight cars leading the downswing by a narrow margin, but there is remarkable uniformity in the manner in which they all rise to high levels during the last quarter of the year.[4]

1881. The three curves based on the quarterly totals of orders for the main types of rolling stock moved in about the same manner in 1881 as they did in 1880. In the case of locomotives and freight cars, however, the recovery was not nearly so great as in 1880. The volume of rail orders maintained a high level during each of the first three quarters and then tended sharply downward. The year as a whole was one of great buying activity on the part of the carriers, more rolling stock of all varieties being bought than in 1880. The trade reports were all indicative of the high state of prosperity prevailing. In January it was reported that the Baldwin Locomotive Works was employing 2,800 men, and even with that large force found its capacity "taxed to the utmost."[5] The next month the *Railroad Gazette* stated that all of the locomotive plants were "full of orders" and that prices had risen 50 per cent. Items were frequent regarding newly organized companies for constructing rolling stock, or old establishments which were expanding. Typical of the situation among the car builders was the announcement in September of the

[4] The decline in orders early in 1880 was felt very severely among the mills producing railway equipment. In May the *Pittsburgh Gazette* said: "In the opinion of many of our leading iron manufacturers, trade in their line has not been so dull for years as it is at present. The bar mills of nearly every concern in the city are either closed or running on half time. . . . If the stagnation continues for another fortnight, most of our large iron works will come to a standstill. . . ." Quoted in *Railway Age,* May 6, 1880, p. 242.

[5] *Railway Age,* Jan. 20, 1881, p. 39.



RAILWAY EQUIPMENT ORDERS, BY QUARTERS, 1880-1886

Cleveland Car Works that the concern had orders on hand to keep it busy for two years.[6]

1882. The railroads continued to buy cars fairly actively through 1882. The number of passenger cars purchased set a new high level, in keeping with the tendency of the order curve of this type of rolling stock to lag all through the period. Freight car orders were almost as great as they were in 1880, but considerably below the record made in 1881. Orders for locomotives and rails were very heavily reduced.

Business in rolling stock was represented as being very good in the early months of the year, apparently running along somewhat on the previous year's momentum. But here and there a contrary note was sounded. In April, for example, it was reported that the Michigan Car Works had discharged more than 300 men. In the same month the Peninsular Car Works dismissed 50 employees.[7]

Spirited interchanges among the periodicals became frequent, statements appearing to the effect that certain plants were shutting down, to be followed a week or so later by denials that any such step was contemplated. A condition of declining business was also implied in the occasional reports from plants which, while admitting that new business was coming in slowly, insisted that they were keeping very busy turning out back orders.

Towards the end of the year there was a considerable increase in the sales of cars in the West. The *Cleveland Trade Review* said:

> Judging from the number of railroad cars for which orders have been given for various lines, there must be a veritable

[6] *Railway Review,* September, 1881, p. 523.
[7] *Railway Age,* April 27, 1882, p. 237.

car famine. . . . But with the present activity of car works we may hope that this state of affairs will not last long. Cars were never turned out on a larger scale than at the present time.[8]

1883. Almost with the opening of 1883 there appeared announcements of a 25 per cent reduction in the price of locomotives, and the manufacturers of steel rails declared themselves quite ready to shut down completely in case of a strike because new business was so very light. Numerous items began to creep into the news columns reporting reductions in wages and in prices, and also of plants passing into the hands of receivers. Sales of locomotives, which had held up remarkably well through 1882, remained good through the first two quarters of 1883, then fell off very abruptly. Orders for other types of equipment had slumped long before.

1884. The purchasing activities of the railroads were at a low ebb in 1884, no signs of reviving activity appearing at any time. In November the Jones Car Works at Schenectady, "estimated to be worth at least $200,000," was offered for sale at auction at an upset price of $87,000, but no bids were received.[9]

1885. The railroads for the most part remained out of the markets during the first six months of 1885. This is shown very clearly both by the statistics on orders, and by the trade reports. The *Railroad Gazette* had said in January: "In some quarters a better feeling is reported, with more inquiries for new cars than have been noted for some time. So far few actual orders are reported, but car builders are looking for an improvement in their business more than they have been for some time past." [10]

[8] Quoted in *Railway Age,* December 7, 1882, p. 699.
[9] *Railway Age,* November 13, 1884, p. 707.
[10] January 16, 1885, p. 35.

But in the months immediately following reports were still common of plants remaining closed or closing, and as late as the end of July only one of the three locomotive plants at Paterson, New Jersey, was in operation.[11]

A distinct revival of buying of every type of railroad equipment began in the third quarter of 1885. The revival was most marked in the rail market. In August of that year the rail producers grouped themselves into an association called the "Associated Bessemer Rail Manufacturers" for the purpose of restricting production and stabilizing prices.[12] With the prospect of a reversal of the price trend the railroads suddenly entered the market in large numbers. A large increase in locomotive purchases occurred also in the third quarter of 1885, and both the freight car and the passenger car business made some recovery. The general improvement continued in the fourth quarter.

The reports in the railroad periodicals for the most part support the position that the revival in railroad buying occurred late in the summer.[13] During the late summer the *Railroad Gazette* sent out "circulars" to all the plants manufacturing railway equipment with the purpose of determining current trade conditions and future prospects. Replies were received from seven locomotive builders and two car companies as well as from many plants manufacturing bridge iron, small tools, wheels, and brakes. The reports varied greatly, but, on the whole, showed that the builders of locomotives and cars were not doing so well as the others who replied. The *Gazette* said:

[11] *Railway Review,* July 25, 1885, p. 360.
[12] *Age of Steel,* August 15, 1885, p. 18.
[13] Compare *Railroad Gazette,* September 4, 1885, p. 567; *Railway Review,* January 16, 1886, p. 36.

> Nearly every reply gives evidence that trade has been very bad; and very few indicate that it is now what may properly be called good. . . . Yet the general conclusion from the mass of evidence is that business is improving, not only because a number of establishments are doing better than they did, but because of the almost universal evidence that business is nowhere getting any worse. . . . What changes there are almost universally are improvements.[14]

Subsequent news items bore out the opinion expressed in the editorial just quoted. In November, the Ensign Manufacturing Company was running overtime to fill orders on hand.[15] Current issues of the trade periodicals reported that the Grant Locomotive Works, the Cooke Locomotive Works, and the Pennsylvania Car Works were starting up. The Brooks Locomotive Works reported " a brisk inquiry " for new units. In December the Pittsburg Locomotive Works announced the building of additional plant, the Schenectady Works were increasing their force, the St. Louis Car Wheel Company stated that it was " now more actively employed than for some time past," and the Ohio Falls Car Company let it be known that it would start up on January 1.

1886. The volume of orders fell off somewhat during the first half of 1886, and then the upward movement was resumed. In the spring additional announcements appeared of the reopening of plants long closed and of others experiencing greatly expanded business. During the last half of the year the flow of orders assumed large dimensions. The railway equipment industries had again entered a period of prosperity.

III. SUMMARY

Reviewing the period from 1880 to 1886 as a whole, it is apparent that there was a fairly close resemblance in

[14] October 16, 1885, p. 664.
[15] *ibid.*, November 13, 1885, p. 732.

point of time between fluctuations in the movement of general business and fluctuations in the volume of purchases of railway rolling stock.

The demands of railroads eased off gradually from the high points of heaviest buying as did business from its levels of greatest activity, with only occasional minor contrary movements. The largest volume of buying occurred during the 18 months ending in July, 1881. It will be recalled that this same month marked the high tide of general business prosperity. The railroads continued to make heavy demands on the equipment builders for fully a year longer, in fact passenger car buying did not reach its peak until the second quarter of 1882. But the number of units of all other types of equipment purchased between July, 1881, and July 1882, was distinctly less than had been purchased during the previous 12-months period. Likewise the next 12-months period found buying activity still further reduced.[16] By the summer of 1883 the recession had developed into unmistakable depression. Trade and activity generally followed a similar course, but somewhat later in point of time. The reappearance of the railroads in the locomotive and car markets in the early autumn of 1885 was timed in fairly close agreement with the revival of general business, though the increase in railroad orders oc-

[16] This was perhaps less true in the case of locomotives than in those of freight cars and passenger cars. The *American Machinist* said: "During the year 1882 there was an abnormal demand for locomotives, and all the works were overstocked with orders. The middle of 1883 found the boom passed and orders getting scarce, and by the end of the year the outlook for work became depressing." (Quoted in *Railway Age*, March 6, 1884). But in this connection an examination of the Baldwin order curve will indicate that one large concern at least was not "overstocked with orders" during the period following the spring of 1882.

curred a little earlier than the improvement in general business. The curves move together in 1886.

However, there was little resemblance, with respect to time of occurrence, between changes in the whole industrial situation, and changes in the volume of rail orders. Buying in this field declined sharply during the latter months of 1881, long before there occurred decrease in business operations generally. There was some slight improvement in 1883 but depressed conditions persisted until the revival in the autumn of 1885.

IV. CONCLUSION

The conclusion is clear that during the period from 1880 to 1886 the railroads' buying activities, as regards rolling stock, tended to vary slightly in advance of changes in general business activity. Rail buying was more irregular. In the slump of 1882-1884 the roads withdrew from the rail market a considerable length of time before depression appeared in business generally. There was a short-lived but very intensive burst of buying in the fourth quarter of 1883, long before the appearance of business improvement; then the railroads did not reappear as large buyers until just before the revival became evident.

CHAPTER VI

EXPANDING ACTIVITY, 1887-1893

During the period from 1887 to the late spring of 1893 the United States enjoyed moderately good business conditions without any extremes, either of activity or of depression. The upswing of 1886 continued through 1887. There was a mild recession during the first half of 1888. Recovery was prompt, however, and 1889 and most of 1890 were more prosperous than any period since 1881. In the late fall and winter of 1890-1891 there ensued a reaction somewhat more serious than that of 1888. During the last half of 1891 the pace of business was again accelerated and prosperity was general through 1892 and the first quarter of 1893. A recession then set in which quickly became very severe and by August extreme depression characterized nearly every type of business. The year 1893 drew to a close with no perceptible signs of business recovery.

I. RAILROAD CONSTRUCTION

The statistics relating to railroad construction show that the railroads were heavy consumers of steel throughout the period from 1887 to 1893, but with gradually decreasing demands. The year 1887 stands as the record year for all time in the building both of main line and of secondary track. The rate of decline in the annual totals of track laid after that date was much more marked in main line than in supplementary track. The annual consumption of rails also showed a downward trend after

1887. Decreases in construction and in rail consumption after that date are more nearly alike if comparison is made on a basis of yearly increases in all track rather than in main line track.

II. EQUIPMENT ORDERS

The volume of orders for rolling stock, year by year, did not vary greatly from 1887 to 1890. Of the four years 1890 made the best record. This was especially true of freight cars, of which 10,000 more were ordered than in any previous year. No new records were set in the volume of sales of other types of equipment.

The quarterly totals of orders fluctuated greatly until 1890, but this fluctuation seems to have been due to seasonal factors rather than to any considerable variation in the annual rate of buying. Railroad purchasing on the whole proceeded rather evenly.

1887-1888. The very sharp drop in the volume of orders for all types of rolling stock during the second and third quarters of 1887 was probably in large part a reaction from the swell of orders in the latter part of 1886 and the first quarter of the new year.[1] The railway periodicals attempted to account for the decline by pointing to the uncertain effects of the newly passed Interstate Commerce Act.[2] The order statistics indicate, however, that after a breathing spell there came a renewed buying movement which reached its height in the first quarter of 1888. An occasional item in the trade

[1] *Railway Age,* January 14, 1887, p. 22, and January 21, 1887, p. 50. The *Railroad Gazette* announced on February 11 that the Michigan Car Works had refused to bid on an order for 5,500 cars due to too much other work.

[2] *Railway Age,* February 25, 1887, p. 139, and May 20, 1887, p. 354.

magazines reflected this increased buying activity of the railroads. In October the Baldwin Locomotive Works reported that "business was never greater";[3] in the following month the car works at Fullerton, Pennsyl-

RAIL STATISTICS, 1886–1893 [a]
(In thousands of gross tons)

Year	Production	Imports	Exports	Apparent Consumption
1886.....	1,601	42.0	3.0	1,639
1887.....	2,140	138.0	0.5	2,277
1888.....	1,404	63.0	7.0	1,460
1889.....	1,522	6.0	9.0	1,519
1890.....	1,885	0.2	17.0	1,869
1891.....	1,307	0.3	11.0	1,296
1892.....	1,552	0.3	8.0	1,544
1893.....	1,136	3.0	20.0	1,119

[a] American Iron and Steel Association, *Annual Statistical Report*, 1904.

RAILROAD CONSTRUCTION, 1886–1893 [a]
(In thousands of miles)

Year	Line in Operation	Increase	
		In Line	In All Track
1886.....	136	8.0	7.4
1887.....	149	12.9	17.0
1888.....	156	6.9	6.4
1889.....	161	5.2	10.7
1890.....	167	5.4	6.1
1891.....	171	4.0	6.4
1892.....	175	4.4	7.1
1893.....	178	2.3	6.2

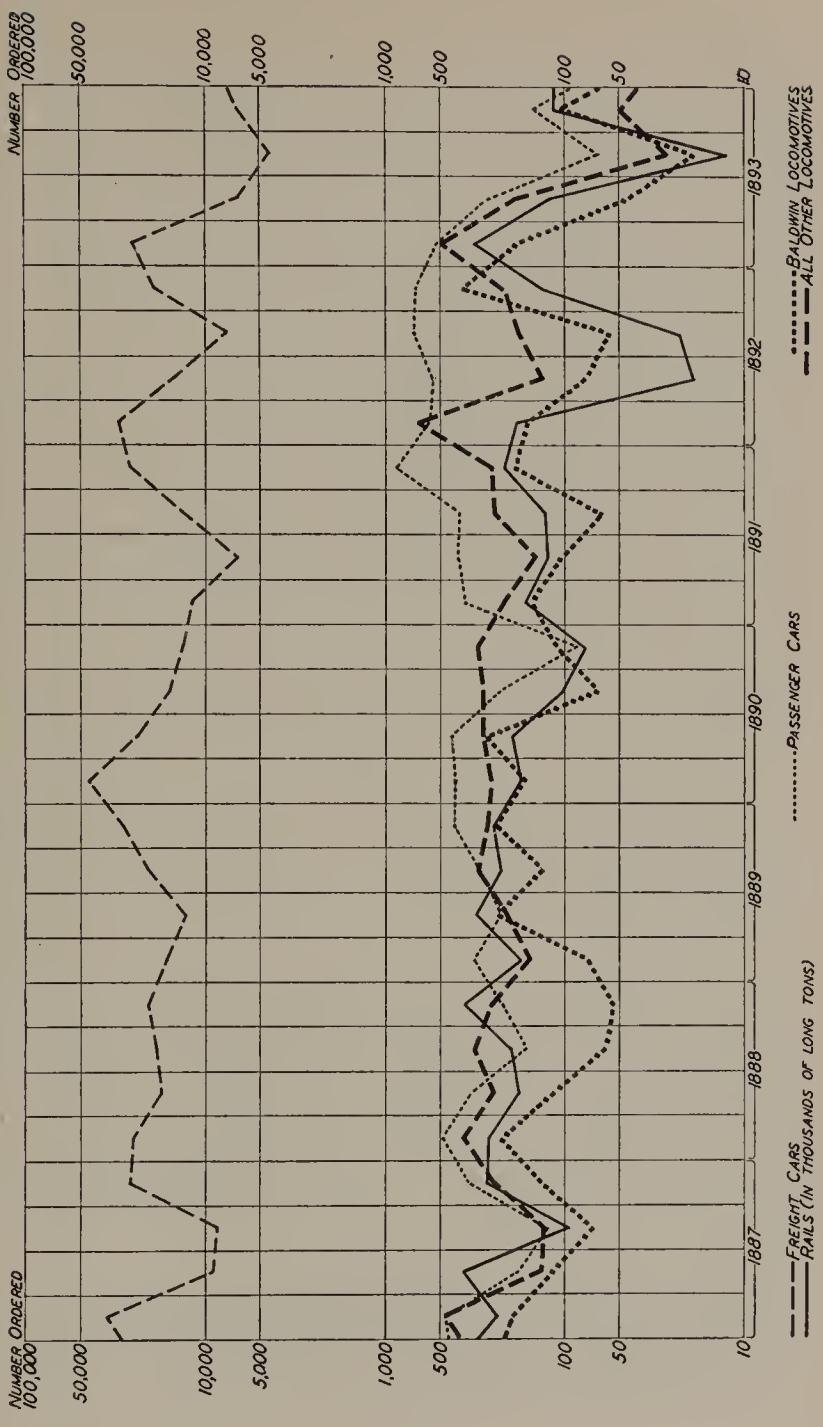
[a] *Poor's Manual of Railroads.*

vania, which had been idle for two years resumed operation;[4] and in January of the following year the Missouri Car and Foundry Company was reported to be working to full capacity.[5] On the other hand, during the same

[3] *Railroad Gazette*, October 14, 1887, p. 669.
[4] *ibid.*, November 11, 1887, p. 739.
[5] *Railway Age*, January 13, 1888, p. 31.

month H. K. Porter and Company, manufacturers of locomotive engines, was compelled to close because of a lack of orders.[6] Aside from the freight car market, buying was not well sustained during 1888. This dullness was reflected in the 10 per cent reduction of wages at the Edgar Thomson Steel Works at Braddock, Pennsylvania,[7] the shutting down of numerous steel plants in June,[8] and the closing of the Grant Locomotive Works at Paterson, New Jersey, in March.[9] In July the "Board of Control" of the associated steel manufacturers[10] announced that sales of rails up to that time were only slightly more than 50 per cent of the 1887 figures.[11] In June there appeared notices of the organization of a new company in Virginia to manufacture locomotives and cars, and of the action taken by the Muskegon Car Works in Michigan to expand its facilities.[12] This latter named plant further enlarged its capacity in October, and in the same month there came word of the building of a new "car manufactory" at Duluth, Minnesota.[13] But such items were scattering and the press comments on the car and rail markets were not at all enthusiastic. It will be recalled that business generally was poor during the first half of 1888 and, for the year as a whole, enjoyed only "fair prosperity." One noticeable development of the year was the tendency of railroad companies to construct their own shops for building rolling stock.

[6] *ibid.*, January 6, 1887, p. 6.
[7] *ibid.*, February 24, 1888, p. 126.
[8] *Iron Age,* June 28, 1888, p. 1043.
[9] *Railway Age,* March 30, 1888, p. 210.
[10] American Iron and Steel Association *Bulletin,* August 24, 1887, p. 24.
[11] *Iron Age,* July 19, 1888, p. 100.
[12] *ibid.*, June 1, 1888, p. 354, and June 8, 1888, p. 370.
[13] *ibid.*, October 26, 1888, p. 695.


RAILWAY EQUIPMENT ORDERS, BY QUARTERS, 1887-1893
NUMBER ORDERED
100,000
50,000
10,000
5,000
1,000
500
100
50
10
1887
1888
1889
1890
1891
1892
1893
FREIGHT CARS
RAILS (IN THOUSANDS OF LONG TONS)
PASSENGER CARS
BALDWIN LOCOMOTIVES
ALL OTHER LOCOMOTIVES

1889. The new year did not bring the enlarged volume of business for the equipment builders that had appeared in 1887 and 1888, although the Baldwin Locomotive Works provided a partial exception to this statement. Work became so slack in the Pullman shops at Chicago that 1,200 employees, or 25 per cent of the force, were laid off in May, and the wages of the others were reduced.[14] In the following month the number of men who were released temporarily increased to 1,500 and all the others were put on part time.[15] The data on orders indicate that during the early winter there occurred a great buying movement in freight cars. In October the Pullman Company reported that it had been so full of orders "during the past month" that it had had to decline contracts for 2,000 cars;[16] work was resumed on a large scale in the Mount Clare shops; and in the following month the Ohio Falls Car and Manufacturing Company was reported to be "running night and day to complete orders," and employing 875 men.[17] Some of the locomotive works were busy—the Brooks Locomotive Works was running overtime.[18]—but they were apparently not experiencing the same pressure of demand as the car shops.

Orders for both freight and passenger cars set a new high record during the first half of 1890. The volume of locomotive orders during the six months was moderate, although larger than in the year before. The rail industry, however, showed no signs of increasing activity. The prices of rails had been fairly well maintained by

[14] *Railroad Gazette,* May 17, 1889, p. 324.
[15] *National Car and Locomotive Builder,* June, 1889, p. 87.
[16] *Railroad Gazette,* October 11, 1889, p. 658.
[17] *ibid.,* November 1, 1889, p. 719.
[18] *ibid.,* December 6, 1889, p. 809.

the "Board of Control" since its formation and had been advanced during 1889, but they fell off steadily during 1890. By the end of the year the quotation per ton was $7.00 under the January figure.[19] On November 20, the *Iron Age* stated that no new business whatever had been booked by the rail mills for 1891.

The unprecedented flow of freight car orders was reflected in the formation of many new companies and the expansion of the plants of those already established. In its issue of February 15, the *Railway Review* told of the organization of the Steel Tubular Car Company in Pennsylvania with a capital stock of $5,000,000. It had purchased land with a view to building shops in which 5,000 men would be employed. On March 15 appeared an account of the expansion plans of the Southern Car Works. The next month there was a story of a new car building concern at Venice, Illinois. In June the Mount Vernon Car Manufacturing Company, also in Illinois, announced that it would be ready for the production of cars in August, and in the same month the Ensign Car and Manufacturing Company in West Virginia broke ground for an addition to its shops. And so it continued throughout the year: Macon, St. Louis, Kansas City, Buffalo, Vicksburg, Buena Vista, Virginia, Beaumont, Texas, among others were announced as the locations of new or enlarged car building plants, in most cases new plants. An explanation for this rapid increase of facilities was the seemingly prevalent opinion expressed by the *St. Louis Globe-Democrat:* "The demand for cars all

[19] There is considerable question as to the real significance of these quotations so far as actual contracts were concerned. The following May the *Iron Age* published an interesting chart showing the differences between the selling prices of a large concern and market quotations for the period, 1885 to 1890, inclusive. *Iron Age,* May 14, 1891, p. 930.

over the country is always in excess of the supply." [20] In August the Baldwin Locomotive Works at Philadelphia began the construction of a new addition to cover an acre of ground,[21] and there were other indications of considerable activity among the locomotive builders, but it did not equal that of the other rolling stock interests.

The shock which business experienced in the fall of 1890 was not clearly reflected in equipment orders until 1891. Orders for locomotives placed with other builders than Baldwin totaled more in the fourth quarter of 1890 than in any other quarter of the year,[22] and orders placed with the Baldwin Locomotive Works also moved upward. Orders for freight and for passenger cars were in small volume during this period, but it is difficult to see that the decline already in process was particularly accentuated. The same observation holds true of rail purchases.

1891. Aside from the passenger car industry the builders of railroad equipment experienced dull markets during the first nine months of 1891. This condition was quite in harmony with the prevailing status of trade and industry. The quietness which characterized the markets for railway equipment for approximately twelve months, or until the late fall of 1891, seems not to have checked the plans of those who were projecting enlargements of existing plants or the construction of new plants. The periodicals in their issues of 1891 contained frequent references to the carrying out or completion of the schemes broached in the previous years. The great buying movement which occurred in the last quarter of

[20] Quoted in the *Railway Review,* September 6, 1890, p. 533.
[21] *ibid.*, August 30, 1890, p. 518.
[22] Monthly figures for December decreased sharply, however.

1891 and the first quarter of 1892 doubtless saved many of these newly fledged concerns from bankruptcy. There was also a slight increase in the volume of orders for rails during this fourth quarter. On December 10 the *Iron Age* estimated that the mills had orders and options for 1892 delivery amounting to nearly 600,000 tons.[23]

The railroads purchased rolling stock in large volume during 1892, the year's total of orders exceeding that of 1891 for every type. Quarter by quarter, this year bore a noticeable resemblance to 1887; large buying activity in locomotives and freight cars in the first and fourth quarters with a considerable slackening during the middle six months. This resemblance is less marked in the case of passenger car orders, which maintained a very high level throughout the year. There was no intimation here of an impending trade crisis.

On the other hand, the roads were not buying rails in 1892 to any considerable amount. On the basis of our data it is necessary to go back to 1876 to find so poor a year. Early in June the *Iron Age* had remarked: "Most diligent inquiry fails to unearth any transactions of consequence in this locality,"[24] and in November it stated that the rail trade was "the one department out of joint."[25] In December, however, the orders totaled 93,000 tons, much the largest figure for over a year.

1893. The purchases of equipment of all varieties by the railroads during the first quarter of 1893 were large, though passenger car orders were declining. Orders for rails declined sharply in March, and for other

[23] p. 1840.
[24] June 2, 1893, p. 1094.
[25] November 3, 1892, p. 848.

types of equipment in April and May, and in June business of all kinds almost ceased.

One of the interesting features of the railway equipment industry during the first nine months of 1893 was the launching of new concerns. On January 14 the *Railway Review* reported that car works were to be erected at Lenoir City by a company capitalized at $250,000; and in the following week this magazine carried stories of the organization of the Piedmont Car Construction Company to be located at Atlanta, and the Caswell Car Company formed at Chicago with a $500,000 capitalization. In February came the report of the incorporation of the American Car Company at Basic City, Virginia; in April appeared the announcement of the organization of the Gilbert Car Works at Green Island, New York; and in the following month the Silverhorn Refrigerator Car Company came into being in Illinois. Two more car companies were formed in June, and in July it was announced that the "mammoth" shops of the Union Car Company at Depew would be ready for operations on October 1. The most grandiose project was reserved for September. On the 9th of that month the *Railway Review* stated that "papers had been signed for the location of the Raub Locomotive Works at Elwood, Indiana." It was reported that the plant was to be a large one and that the plans included a free college, to be established with the purpose of providing higher learning for the employees and their families.[26]

It is clear that a considerable section of the business community was quite unaware of impending disasters and even unable to recognize them when they were happening. Probably the great inflow of orders from the

[26] This list of new companies is illustrative but not complete.

railroads that occurred during the latter part of 1892 and the early months of 1893 encouraged the promoters to proceed with their plans.

Aside from the rolling mills, which began to complain of unusually poor business long before summer arrived, the equipment builders seemed to be operating at a satisfactory rate as late as June. Even in July the Baldwin Locomotive Works reported that it was behind in its orders.[27] In the previous month, however, the Grant Locomotive Works passed into the hands of receivers,[28] and in August the Brooks Locomotive Works laid off 200 men.[29] On July 13 the *Iron Age* said, relative to rails: "Not only are no new orders coming in but deliveries are being postponed, simply because the railroads are too poor to pay for the rails. As it is the mills will have nothing to do after the middle of next month, even when they are nursing what orders they have got." Conditions were the same in August: "The only features of the market are cancellations of orders which came from even the strongest roads. To the weaker lines, the mills do not ship rails rolled until payment is secured."[30] By September "practically every rail mill in the country" was idle.[31] In this month there appeared frequent reports of locomotive and car building plants reducing their forces or closing entirely,

[27] *Railway Age and Northwestern Railroader,* July 7, 1893, p. 535.

[28] *ibid.,* June 9, 1893, p. 463. This plant had been in operation less than a year. *Railway Review,* July 12, 1890, p. 414, and June 11, 1892, p. 380.

[29] *ibid.,* August 18, 1893, p. 636.

[30] *Iron Age,* August 10, 1893; quoted in the *Bulletin of the American Iron and Steel Association,* August 16, 1893, p. 246.

[31] *ibid.,* September 7, 1893; quoted in the *Bulletin of the American Iron and Steel Association* September 6 and 13, 1893, p. 270.

with one of the newly organized concerns, the Gilbert Car Works, passing into the hands of a receiver.[32]

The statistics on orders show that during the last quarter of 1893 there was a very slight improvement in the business of the railway equipment industries. It may have been this development which prompted the *Iron Age* to say:

> It is significant that orders for cars which are now being placed by railroads are stated by the purchasers not to be an outgrowth of present necessities. They have plenty of cars to handle the business now offering. But it is encouraging to note that at the same time the managers of these railroads think that the new cars will be needed at a reasonably early day and that it is wise to buy them now when so many works are in need of orders and prices are the lowest ever known.[33]

Other testimony to the belief that the depression was to be of short duration existed in instructions received by the Baldwin Locomotive Works "to complete work which at the request of the railroads ordering it, was temporarily suspended a few weeks ago when there was such trouble in the money market."[34]

Perhaps the most original explanation for the decline in railroad purchasing in the early winter of 1893 was given by a railroad executive and recounted in the *Railway Age and Northwestern Railroader:*

> The other day a reporter in Philadelphia asked President Roberts of the Pennsylvania system if his company would take advantage of the recent cut in the market price of steel rails and he is reported to have replied: "We are not speculating on the misfortune of others, and our purchases of steel rails for

[32] *Railway Age and Northwestern Railroader,* September 1, 1893, p. 669.

[33] Quoted in *Railway Age and Northwestern Railroader,* December 29, 1893, p. 922.

[34] *Railway Age and Northwestern Railroader,* November 24, 1893, p. 853.

the coming year are likely to be even less than this year's purchases! "[35]

III. SUMMARY

Reviewing the changes in the volume of rolling stock and rails purchased from year to year during the period as a whole, the outstanding features are, first, the clearly defined downward trend in the order curve for rails which is, of course, in conformity with the decreasing annual totals of new track construction, and, secondly, the even flow of orders for rolling stock during the late eighties, followed by sharp fluctuations in the quantity of these orders during the first portion of the nineties.

The volume of railroad purchases of rolling stock fluctuated rather closely in accordance with the varying fortunes of trade and industry generally, that of rail purchases less so. All builders experienced fair prosperity during 1887, 1888, and 1889. The recession in general business during the first half of 1888 was shared by the rail and rolling stock builders, but the decline in railroad purchasing lagged both on the decline and on the rise, neither of which was at all pronounced. Coming to the more clearly defined movement of the early nineties, it appears that the decline in industrial and commercial activity which began in November, 1890, was preceded several months by lessening activity in buying rolling stock. Orders for freight cars dropped off abruptly in the second quarter of 1890, followed during the summer by a similar movement of orders for locomotives and for passenger cars. Nor was there any such recovery in the fall as often occurred. Rail buying

[35] November 17, 1893, p. 838. It was during this same month that the rail manufacturers drew up a new agreement. *Iron Age*, November 23, 1893, p. 938.

indeed had begun a long continued decline back in the third quarter of 1889. Buying of rails recovered slightly during the first half of 1891, in spite of the depression then prevailing, and worked higher in the last six months of the year. This renewal of activity was of short duration, and 1892 witnessed another slump. The gradual recovery of business which began in August, 1891, was accompanied by a steady increase in the purchases of locomotives and freight cars. As was just noted, rail buying had begun to pick up in the first quarter of 1891. Passenger car buying increased at the same time, and in much greater degree. Orders for rolling stock were placed in large amounts during 1892 and through the first quarter of 1893. Renewed activity in the rail markets in the last quarter of 1892 continued during January and February of the next year. The data on orders indicate that the railroads did not withdraw from the markets for rolling stock until April. The coming crisis was not anticipated by any considerable margin.

The broad conclusion is reached that during the years from 1887 to 1893 changes in the volume of railroad purchasing usually, but not invariably, anticipated similar changes in the volume of business activity.

CHAPTER VII

DEPRESSION AND REVIVAL, 1894-1897

I. GENERAL BUSINESS CONDITIONS

In the years following the panic of 1893 the country passed through a depression of extraordinary severity. In particular the year 1894 was one of the worst years in the history of American business. Falling prices, unemployment, strikes, and very adverse agricultural conditions combined to create an atmosphere of intense pessimism. The deplorable state of national finances aggravated the situation. The Treasury was faced with a budget deficit, there was great uncertainty regarding the future of the currency, and European investors were unloading American securities and taking the proceeds in gold.

During the first part of 1895 the aspect of things changed for the better, apparently as a result of the well-known contract with the Morgan-Belmont Syndicate. Signs of business revival appeared as early as March,[1] and by June every monthly index of business activity which we have had registered an upturn. Prices, wages, bank clearings, and other indexes of prosperity all registered a rapid upturn during the fall.

But the upward movement was of short duration, and was not impressive in extent. By midsummer gold was once more flowing out, in spite of the syndicate's efforts, and confidence in the currency was shaken. Business activity again sank to a low ebb.

[1] Mitchell, W. C., *Business Cycles,* p. 179.

In 1896 political difficulties furnished an additional repressive influence. Bryan's silver campaign threw business men into a state of deep concern, and trade and industry remained stagnant until after election.

Immediately after the election of McKinley there was a brief burst of activity, but it lasted only a few weeks.[2] "The great industrial and business revival which the Republicans had promised and which their newspapers advertised failed to materialize."[3] The new year opened with business sentiment at lower ebb even than it had been twelve months earlier, because of disappointment over the collapse of the budding revival which had followed the election.

But the long-awaited major upswing was not far away. Once more the early summer brought improvement and this time it quickly developed into great prosperity. In August a "boom" occurred on the stock exchange, which was attributed to the promising agricultural prospects.[4] It was becoming evident that the highly profitable experiences of 1879 and 1891 were to be repeated. "It was the bounty of nature, the United States being given plenty while other parts of the world were left with an insufficiency, that put the country on the road to prosperity."[5]

II. RAILWAY CONSTRUCTION

In the depression years following 1893 additional main line was constructed at the slowest rate since Civil War days.[6] There were four successive years in each

[2] Noyes, A. D., *Forty Years of American Finance*, p. 267.
[3] Mitchell, W. C., *Business Cycles*, p. 59.
[4] *ibid.*, p. 180.
[5] *Financial Review*, 1898, p. 1.
[6] Except for the single year 1875 when the increase of new first track fell to 1,700 miles.

of which less than 2,000 miles of additional line were built. This figure seems very small when contrasted with the four years from 1886 to 1889, during which the increase amounted to 33,000 miles. The amount of secondary track[7] laid during the nineties was proportionately larger. In the years from 1887 to 1893 approximately one-third of all new construction was secondary track; in the years from 1894 to 1897 the proportion rose to about one-half.[8]

The statistics of rail production do not show the extreme variability that characterizes both new line and total track construction. It is necessary to go back only ten years to find a period during which rail output was as low as during the nineties, and in still earlier periods the production hardly approached that of the latter period. The difference is due, of course, to the increase in requirements for replacements which are much more stable than the demand arising from new projects.

III. ORDERS FOR RAILROAD EQUIPMENT

1894. The volume of railroad buying in 1894 was the smallest since 1877. This statement applies to every type of rolling stock and to rails as well. The brave at-

[7] Including in that term sidings, switch track, and so on, as well as second or third main line track.

[8] The Interstate Commerce Commission observed: "A comparison of the rate of increase in the several classes of railway mileage as compared with the increase of previous years supports the conclusion presented in former reports that commercial depression does not exert so direct an influence upon the extension of second track, third track, fourth track, and yard track and sidings as upon the extension of single track mileage. A distribution of this increase in mileage to the several lines would show that it represents an improvement to the property of the more wealthy corporations. . . ." *Statistics of Railways in the United States,* 1897, p. 14.

tempt that had been made in the latter part of 1893 to proceed with business as usual in spite of the financial crisis came to naught, and the amount of new business booked fell almost to zero.[9]

The comments appearing in the columns of the current periodicals reflected the situation accurately. One after another, shops were reported as closing down "again," and the Grant Locomotive Works continued to be without a buyer. The reporters, with what may have been the praiseworthy purpose of injecting some cheer into an otherwise gloomy situation, were quick to convert each rumor of a sale into a fact, and the railroad officials were kept fairly busy making denials. Labor troubles in the bituminous coal fields worked to the advantage of the anthracite coal carriers. The Philadelphia and Reading Railroad announced in July that its car shops had received orders to work twelve hours a day, in order to "add to its car equipment by rushing the repairs of some of the 15,000 'shop' cars that are said to hang on side tracks all over the Reading System."[10] But this improvement was strictly local and did not result in orders for new equipment. In the rail markets the carriers were asking that delivery of material already ordered be delayed. *Age of Steel* on July 25 said: "One great Southwestern system is reported as not having called at all as yet on a Western mill with which it has a contract for 50,000 tons." As late as October 18th the *Iron Age* stated that "no business for 1895 has yet been closed." The Michigan-Peninsular

[9] There was a very slight improvement during the last quarter of the year, especially in the case of locomotive purchases.
[10] *ibid.*, July 6, 1894, p. 385.

Car Company at Detroit, employing 1,500 men, resumed operations in the early fall but shut down again "after a short period of activity." [11]

1895. The railroads were surprisingly active in the freight car market during all of 1895. The volume of

RAILWAY EQUIPMENT ORDERS, BY QUARTERS, 1894-1897

orders throughout the year was relatively large and the trend was upward, the fourth quarter total being nearly 50 per cent greater than that of any previous quarter. This decided increase in buying activity began several months before the brief revival of general business activity. The reason for it is perhaps contained in the

[11] *Railway Age and Northwestern Railroader,* September 28, 1894, p. 556.

following statement: "The present condition of the freight car equipment may be judged from the fact that one of the Eastern coal roads has had over 5,000 cars destroyed or put out of service in the last two years and not a single new car has been bought to fill up the blanks. Yet the company is crowded with business. Other roads are in a similar condition." [12]

However, it does not seem correct to assume that all of the buying was done from necessity. The movement really started in February when orders for more than 10,000 cars were placed, of which 3,000 were purchased by the New York Central Railroad. The transaction, which recieved a large amount of publicity, was thus accounted for by H. Walter Webb, Vice President: "The company orders these cars at this time for the reasons that they can be obtained at an uncommonly low price, and they can be completed in ample time to meet the demands of our traffic. I think that next autumn will witness a very pronounced improvement in railway transportation business. Additional cars will then be needed by all the railroad companies, and the car builders will be likely to have their hands full." [13] However, only a minority of the railroads took part in this spring buying movement, and there were as many denials of orders of contemplated purchases as had been reported during 1894.[14]

The rail market improved somewhat in the first half of the year and, as the *Iron Age* pointed out, "sales for

[12] *Locomotive Engineering*, February, 1895, p. 86.

[13] *Railway Age and Northwestern Railroader*, March 15, 1895, p. 131.

[14] See, for example, the *Railway Age and Northwestern Railroader* for February 22, 1895, p. 95; March 1, p. 109; and May 3, p. 219.

the first six months in this country were far in excess of the total sales of 1894." During the third quarter the volume of business increased still more, but the latter part of the year saw a decided falling off in buying. As a whole, 1895 could not be called a very prosperous year for the rolling mills.[15]

As was noted above, the railroads bought heavily of freight cars all through the year 1895, 75,000 freight cars being reported as ordered, against less than 20,000 in 1894. The *Railway Age and Northwestern Railroader* stated in October that the car shops all over the country were being "worked to a greater amount than since 1892."[16] The movement reached its peak in November when orders were noted in the magazines for nearly 13,000 units, of which 6,000 were purchased by the Pennsylvania. With respect to this large transaction it was declared: "The railroads held off improvements until the upward turn should come, and now their requirements are beginning to crowd the manufacturing establishments with orders."[17]

Aside from the item of freight cars there was no marked increase in buying during the first two quarters of 1895, and even in the latter part of the year there was little reflection of the "trade boom" in the case of locomotives and none at all in passenger cars.

[15] "Up to October 1st the deliveries this year footed up to about 570,000 tons, while the sales aggregated 708,000 tons. It is quite clear, therefore, that 1895 was a pretty poor rail year, which emphasizes all the more strikingly the enormous general demand outside of railroad requirements." *Iron Age,* October 24, 1895, p. 859.

[16] October 25, 1895, p. 534.

[17] *ibid.,* November 1, 1895, p. 535. This of course was written before the collapse of the revival, which occurred in December. See p. 268.

1896. There was another recession in railroad buying in 1896. The total number of orders placed during the year showed an increase over 1894, but this was due almost entirely to the first quarter's showing. The momentum of the buying movement of the latter part of 1895 carried through the first quarter, after which the markets were extremely dull right up to the close of the year.

On January 2nd the *Iron Age* stated that there was "absolutely no demand for steel rails"; and in September: "Practically every rail mill in the country is closed down." In December the rail manufacturers voted to reduce the price of steel rails $3.00 a ton. Conditions within the rolling stock industries seem to have been much as they were in 1894. Numerous denials of rumors of prospective orders continued to be made in the press, some of the officials becoming facetious in regard to the situation. Concerning a rumor that the Chicago and Northwestern was going to buy 50 engines at once, the *Railway Age and Northwestern Railroader* said: "We are informed by the officers of the company that while the motive power department would like very much to have 50 or something like that number of new engines, the probabilities of the order being placed are very meager. . . ." [18]

As in other lines of industry, the depression was charged against the current political campaign, and promises regarding the future were interwoven with party propaganda. "Although business throughout the country is greatly hampered by the impending election and its uncertainty, it is a fact that the factories . . .

[18] Dec. 11, 1896, p. 479.

are making ready for the opening of their places of business as soon as the presidential choice is made—providing always, of course, that Major McKinley is elected." [19]

1897. The freight car and passenger car markets were depressed through the first two quarters. In January and February announcements appeared of the insolvency of three car building companies and of another which was being reorganized.[20] But in the early fall conditions changed. Both freight and passenger car builders enjoyed a genuine revival. "Newspaper reports from Michigan City contain the startling statement that the Haskell and Barker Car Company have posted in their shops a notice that they have work enough to keep their force of 1,500 men busy 12 hours per day for two years." [21]

The railroads bought locomotives in increased quantities all through 1897. In fact the volume of locomotive sales had reached its low point in the third quarter of 1896, after which there came larger purchases in almost every succeeding quarter. It is clear that the buying of locomotives was greatly stimulated before the revival of general business occurred. Undoubtedly much of this buying was of necessity and not in anticipation of the period of great prosperity which was just ahead. There had been no such expansion of sales of this type of rolling stock in 1895 as had occurred in the freight car market, and many of the railroads must have been in dire need of new motive power.

[19] *ibid.*, September 25, 1896, p. 255. But in a later issue, in December, this periodical was compelled to say: "Yes, we know that times are bad, but did you expect the country after three and a half years of desperate sickness to grow strong in a week. . . . ?"

[20] *ibid.*, January 1, 1897, pp. 20, 22, 77; and February 5, p. 113.

[21] *ibid.*, September 3, 1897, p. 724.

A tremendous tonnage of rails was purchased during the first quarter of 1897, and there can be no question that this phase of the railroads' buying activities preceded, by a considerable margin, the revival of business generally. The principal cause of this outburst of rail buying was the collapse of the steel rail pool. It will be recalled that the Bessemer steel rail manufacturers had organized an association in August, 1885, whose primary purposes were to allot output quotas and to " stabilize " prices. This association had exerted considerable influence on the rail markets, although its career had been a stormy one internally, and there had been much irritating competition from independents. The long period of dull trade during the middle nineties threw a great strain on the association and it finally broke apart in February, 1897.[22] A brief account of the immediate circumstances of the collapse appeared in the *Railway Age and Northwestern Railroader* of February 12:

On Tuesday afternoon the announcement was made in Chicago that the railmakers' association, commonly called the steel rail pool, had gone to pieces. The report was soon verified by the astonishingly low prices just made by the representatives of the Carnegie Steel Company. Intending purchasers have been holding off in the hope that prices would go lower than the regular pool quotations of $25 at Pittsburg and $26 at Chicago, but they hardly expected that they would be able to buy rails at $17 per ton in Chicago. That is what occurred however. It is stated on the most reliable authority that on Wednesday the Carnegie people sold 10,000 tons to the Sante Fe at that price and that the Illinois Steel Company took an order for 42,000 tons from the Illinois Central at the same figure. . . . It is reasonable to suppose that the drop from $29, the price of a year ago . . . will not be permanent. A considerable revival of railway building is now in sight." [23]

[22] *Iron Age,* February 11, 1897, p. 18.
[23] p. 131.

A week later it was estimated that orders for one and one-half million tons had been filed.[24] In this heavy buying of rails the same motives seemed to govern as in the case of locomotives. The rush of orders, large as it was, equalled "the normal annual requirements of the rail roads of the United States" only.[25] There appeared to be no expansion program in view. In April, the *Iron Age* said:

> As a matter of fact it is quite evident that the railroad companies are or feel poor and are hedging on their former estimates of 1897 requirements . . . on which the estimates of 1897 rail sales were based. They may ultimately take the full quota. . . . In the light of facts now available, the estimates of tonnage made soon after the break need some scaling down. Still, a more favorable turn is possible.[26]

And as late as October the hope was expressed that "a good many roads, notably in the West, may conclude to make the necessary renewals, particularly in the direction of putting down much heavier sections."[27]

IV. SUMMARY

The railroads purchased equipment in greatly diminished amounts during the depression period of 1894 to 1897. The outstanding exception to this was the purchase of freight cars in 1895. The great expansion in orders for this type of equipment, which occurred in that year anticipated the short revival in other industries but was perhaps accentuated by it. This premature

[24] The *Financial Review* was more conservative in its estimate, placing the total rail orders at 1,102,892 tons, the amount produced the previous year, 1898. p. 5.

[25] *Railway Age and Northwestern Railroader,* February 19, 1897, p. 149.

[26] *Iron Age,* April 8, 1897, p. 26.

[27] Quoted from *Iron Age* in *Railway Age and Northwestern Railroader,* October 8, 1897, p. 842.

recovery was not reflected in any marked degree in expanded sales of other equipment to the railroads. The genuine revival of business, beginning in the summer of 1897, was preceded by decidedly more active buying of locomotives and rails, and was accompanied by an expanding volume of purchasers of freight cars and passenger cars.

CHAPTER VIII

ABOUNDING PROSPERITY, 1898-1903

I. INDUSTRY AND TRADE

Of the years following 1897, Mitchell says: "... the period of prosperity which began in 1897 ran a long and even course, resisting both the pressure of the European crisis in 1900-1901 and the excesses of domestic speculation. Indeed, it was not until after some six years of abounding prosperity that general business as opposed to financial operations, received a serious setback." [1] The series of annual data reproduced in the table in Appendix A, page 000, confirm this characterization of the period. Very brief consideration need be given to the developments of particular years.

In 1898 there was no sudden burst of activity such as the country witnessed in 1880, but "the year was one of growing activity and rising prosperity." [2] The return of full prosperity was delayed in the spring by the outbreak of the war with Spain, and later on, in the fall, there was another minor reaction.

Unmistakable prosperity finally put in its appearance in 1899. Concerning that year the *Financial Review* said: "Not since the extraordinary buoyancy which developed in 1879-1880, after the resumption of gold payments, was activity so general and so widespread, and of course the volume of trade was far in excess of any previous period. . . ." [3] A severe reaction developed on

[1] *Business Cycles*, 1913, p. 63.
[2] *Financial Review*, 1897, p. 1.
[3] *ibid.*, 1900, p. 1.

the stock exchange " which the timely and judicious intervention of our banks and bankers prevented from spreading and causing general ruin." [4] but, as Mitchell observed, " the most striking feature of the year . . . was that the troubles of stock market created hardly a ripple of disturbance in general trade." [5]

In 1900 conditions were less even. There were distinct signs of recession in the spring and summer, but a great bursts of activity followed the elections and " the year closed under extremely favorable auspices with the utmost cheerfulness prevailing in financial and commercial circles." [6] The following year, 1901, business confidence received a number of severe shocks, including the assassination of President McKinley, the Northern Pacific " corner," a steel strike, a bad agricultural situation, and an unparalleled car shortage. Nevertheless, the year was one of high prosperity and closed with a general feeling of confidence and buoyancy.

In 1902 all previous records of production and trade were broken, and in the first part of 1903 the pace of business was still further accelerated. Financial strain appeared in the middle of the later year, but for some months business activity showed little effect of the tightness of credit. From September on, however, there were clear evidences of business recession, and in the last quarter of the year the reaction was everywhere recognized.

[4] The financial panic was laid at the door of the promoters of great industrial consolidations who were accused of proceeding at too rapid a pace. The public had become suspicious of the ability of many of the new combinations to pay dividends and hence new offerings of securities were not being absorbed.

[5] *Business Cycles,* p. 64.

[6] *Financial Review,* 1901, p. 1.

II. RAILWAY CONSTRUCTION AND THE CONSUMPTION OF RAILS

Both the consumption of rails and the statistics of railway mileage in operation show clearly that there was much greater activity during the latter part of the period from 1897 through 1903 than during the first part. The first table on page 106 indicates that the railroads absorbed rails in an increasing amount, straight through the seven years under review. The second table shows that activity in railroad construction increased until 1899, was checked slightly in 1900 but resumed in 1901, and continued through the next two years. Finally both tables show that there was not a really poor year in the whole period.

The rate of increase in the annual construction of secondary track was very rapid during the period in question. It will be observed that the minor recession of 1900 finds no reflection in the figures for "all-track" construction. As in the period of the nineties, the process of laying new secondary track was much less influenced by variations in general business conditions than was that of extending the lines.

III. RAILROAD PURCHASING

1898. The order data indicate that during the greater portion of 1898 the volume of railroad buying was not large. As was true of business generally, prosperity did not return to the equipment industries with a rush. The first quarter of the year saw quite an expansion in the sale of cars, both freight and passenger, and in the latter part of January the *Railway and Engineering Review* remarked that "the contract car building works have been rapidly filling up with orders during the past few

weeks." But locomotive buying fell off slightly at the opening of the year, as did rail purchases. The next two quarters were marked by a very decided slump in business, and the magazine writers were driven to the neces-

PRODUCTION AND CONSUMPTION OF RAILS, 1897–1903 [a]
(In thousands of gross tons)

Year	Production	Imports	Exports	Apparent Consumption
1897.....	1,648	.4	148.0	1,500
1898.....	1,981	.2	302.0	1,680
1899.....	2,223	2.1	278.0	1,997
1900.....	2,386	1.4	362.0	2,026
1901.....	2,874	2.0	319.0	2,558
1902.....	2,948	64.0	68.0	2,944
1903.....	2,992	96.0	31.0	3,057

[a] From American Iron and Steel Association, *Annual Statistical Report*, 1904.

RAILROAD CONSTRUCTION, 1897–1903 [a]
(In thousands of miles)

Year	Line in Operation	Increase	
		In Line	In All Track
1897.....	185	1.8	3.0
1898.....	187	2.2	3.5
1899.....	191	4.0	5.1
1900.....	194	3.4	7.8
1901.....	199	4.5	8.1
1902.....	203	4.2	8.8
1903.....	207	4.4	11.4

[a] From *Poor's Manual of Railroads.*

sity of discussing the possibilities of future orders. But with the successful conclusion of the war with Spain, the railroads entered the markets for each of the four types of equipment in large volume.

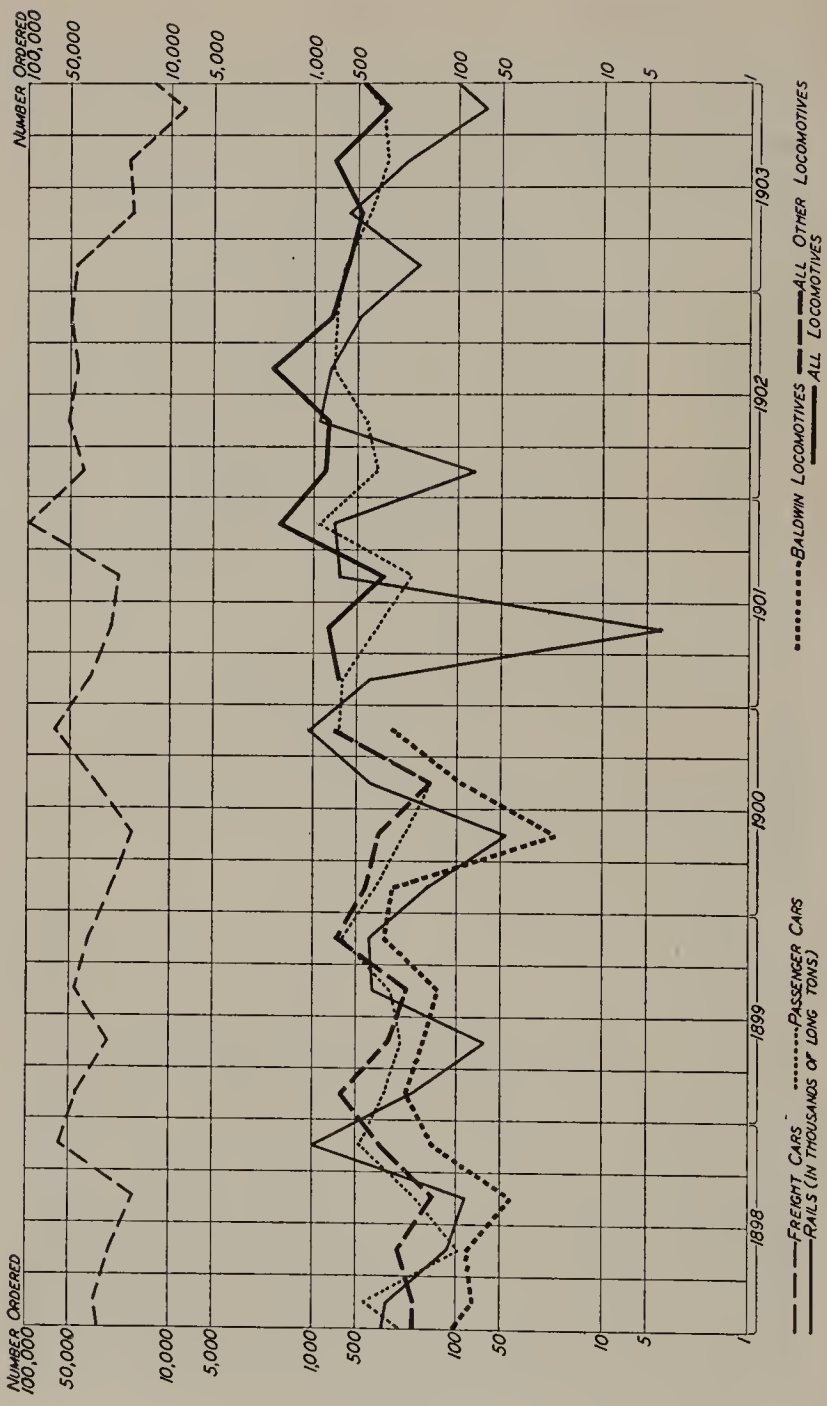
1899. The next year, 1899, opened with a large expansion in the sales of locomotives. In the car markets,

however, the high level of business reached during the last quarter of 1898 was not maintained in the opening months of the new year, and during April, May and June sales of all types of equipment were small, although the builders were busy with old orders. In the second half of the year, as in 1898, another buying wave appeared, involving all types of rolling stock. Indicative of the intense activity among railway equipment builders was a brief item in the *Railway Age* of November 3: "Finding itself unable to buy such (previously described) freight and passenger cars from any of the car manufacturers, the Chateaugy Railroad has decided to convert an old foundry building at Plattsburg, New York, into a car shop. The work is in operation and the company is now turning out charcoal cars."

Rail purchases were small but the dullness was more apparent than real, as the rolling mills were sold out as early as March for months ahead.[7] The quoted price of steel rails advanced from $18.50 a ton in January to $35.00 a ton in November, a price which was maintained for the balance of the year.

1900. The railroads did not buy rolling stock quite so freely in 1900. With one or two unimportant exceptions, the volume of orders for every type of equipment reported in each of the first three quarters of the year, though large, was less than during the corresponding periods of the preceding year. Rail orders were heavily concentrated in the latter months of 1900 and were reflected in the increased production of rails and construction of line in 1901. Yet in spite of the fact that the market for rails seemed relatively poor during the

[7] *Railroad Car Journal,* March, 1899.



RAILWAY EQUIPMENT ORDERS, BY QUARTERS, 1898-1903

first half of the year, the *Pittsburg Commercial Chronicle* stated, on March 17, that many mills in that vicinity were sold out for the year, and in the following month another report contained the information that Chicago mills had declined an order of 20,000 tons "because deliveries asked for could not be granted."[8] Somewhat later, it was admitted in the St. Louis districts that inquiries for heavy rails were not as frequent as during the year before, and reports from New York were to the same effect.[9] It is quite evident that, in common with manufacturing generally, the railroad equipment industries experienced a slackening in the tide of new business during the first eight months of 1900.

In September there occurred a sudden change for the better, and the volume of orders was so great during the latter portion of the year as to bring the year's totals to a level almost equal to those recorded in 1899. With the exception of locomotives, the amount of orders for equipment placed on the books during the fourth quarter of 1900 exceeded all previous records, while the tonnage of rails ordered was larger than that placed during the first quarter of 1897 on the occasion of the collapse of the steel rail pool.[10]

1901-1902. It seems unnecessary to consider 1901 and 1902 separately. The railroads bought both rolling stock and rails in tremendous volume throughout the two years. The records which had been made in 1899 were overtopped in 1901, and these in turn were ex-

[8] *Iron Age,* April 12, 1900, p. 27.
[9] *ibid.,* June 28, 1900, p. 28.
[10] Another association of rail manufacturers, successor to the one which dissolved abruptly in February, 1897, had been organized. In September, 1900, it fixed the price of steel rails at $26 a ton. The quotations had ranged in the neighborhood of $35 a ton for the period of a year previously.

celled in 1902. Some of the quarterly totals were not especially large, but the periods of lessened activity were invariably succeeded by others in which orders flowed in more freely than ever before. In 1899, the railroads had purchased about 2,700 locomotives, which was then considered an extraordinary record. In 1902 they bought more than 4,300. The builders of other railway equipment enjoyed equally thriving business. Rail buyers had to contract for their requirements months ahead. On October 3, 1901, the *Iron Trade Review* stated that from 400,000 to 700,000 tons of rails had been ordered for 1902 delivery. By November 7, the same periodical announced, these advance orders totalled 1,200,000 tons. The next week the *Iron Age* reported that the United States Steel Corporation had its total output of rails for 1902 under contract. During the next year the practice of "ordering"[11] far in advance of the expected date of delivery was carried to still greater lengths. In June, 1902, 400,000 tons of steel rails were on the books for 1903 delivery.[12] This total had grown to 2,000,000 tons by the first week in November.[13] On November 13 it was further declared that the mills were sold out up to September, 1903.[14]

Among builders of rolling stock this pressure of new business appeared to be even greater. In the opening week of the new year one of the locomotive companies was declared to have orders on its books for engines

[11] It is reasonable to suppose that many of these so-called orders, "officially" published in total by the steel rail pool, were more nearly of the nature of "reservations." See p. 21.

[12] *Railway Age,* June 13, 1902, p. 907.

[13] *ibid.,* November 7, 1902, p. 506. The *Iron Age* reported slightly smaller figures.

[14] *Iron Age,* November 13, 1902, p. 46.

to be delivered in April, 1904.[15] All the equipment manufacturers apparently had orders for a great many months in advance.[16]

The volume of orders for railway equipment, aside from freight cars, fell off very perceptibly during the last quarter of 1902. There was a small rise in the quarterly total of freight car purchases, but even so the quantity ordered was barely more than half the number bought in 1901 during the corresponding quarter. The decrease in new business during the last quarter of the year was an unusual occurrence, for this period almost invariably exhibited a distinct seasonal movement in the other direction.

This falling off in orders was not given publicity in articles appearing in the trade periodicals. The *Railway Age,* for instance, said: "Looking forward so far as human foresight can carry the vision, the year 1903 should substantially duplicate the record of its immediate predecessor in amount of business done. No indications whatsoever of even the beginnings of an industrial depression are apparent."[17] Another editorial, appearing in the *Railway Age* of the same date, declared that "all possible resources" were being "exhausted" to meet the requirements of the roads, and expressed the opinion that many orders, for locomotives at least, had been "held up for no other reason than a recognition of the possibility that by that time (date of delivery) the want" might "have ceased to exist."

[15] *Railway Age,* January 2, 1903, p. 2.

[16] *ibid.,* January 1, 1904, p. 3.

[17] January 2, 1903, p. 1. As late as March 20, the *Railway Age* contained a detailed list of projected lines to be built in 1903 which totalled over 8,500 miles. Their records showed 5,684 miles of track to have been laid the year before; pp. 479 and 482.

In the case of rails another difficulty seems to have existed. The *Railroad Gazette* said: "The rail manufacturers have refused to reduce the price from $28 a ton and the railroads refuse to order at that figure. It is said that orders at the beginning of the year were only about 800,000 tons, as compared with 2,700,000 tons last year." [18]

Whatever may have been the causes, the fact remains that a slump in railroad buying began in the last quarter of 1902, and developed into marked depression before the close of the following year. There was a slight expansion of rail buying during the second quarter and of locomotive purchases in the third quarter, but in each of these instances the quarterly totals compared very unfavorably with the record of the corresponding quarter in 1902, and in each instance also the downward movement was resumed in the succeeding quarter. The data relative to freight car and passenger car orders provide even clearer cases of a recession in railroad buying which grew in severity all through 1903.

The comments relative to current conditions which appeared in the trade organs indicate that the equipment builders continued to operate at full capacity through the first half of 1903, and possibly longer, running along on orders placed some time earlier. There were some complaints, however, that the railroads were slower than usual in placing their contracts for rails for 1904 delivery. In the early fall, in the face of quiet markets, the rail manufacturers tried to bolster up their hopes by calling attention to the huge traffic being hauled by

[18] January 1, 1903, p. 15. The quoted price of rails remained at $28 for 15 years from May 1, 1901, to May 1, 1916. *Metal Statistics*, 1927, p. 173.

the carriers. On September 24, the *Iron Age* said: "The rail companies are inclined to discount stories of the railroads' prospective retrenchments in view of the excellent tonnage being enjoyed." A week later this statement appeared: "It is believed that the large railroads will soon come into the market and place their requirements for next year. There never was a time in the history of the railroads when their earnings were as large as at present, and if past history is to be followed, the railroads ought to make heavier purchases of rails than ever before." Nevertheless, reports began to appear in October of mills closing down. In the following month the *Iron Age* stated that thousands of tons of rails were piled up in Western mills ready for immediate shipment. In the same month occasional items appeared relative to the curtailing of operations among Eastern mills.[19] In December many rail mills closed down entirely.[20]

IV. SUMMARY

In summary of the years from the close of 1897 to 1904, it is roughly accurate to say that railroad buying varied much as did business activity generally, with the notable exception of the first half of 1903. After a promising rise in the volume of orders in the latter months of 1897, which continued into the next year, there occurred a distinct slackening in the flow of new business to the railway equipment builders. This terminated in the fall of 1898, the ensuing upswing receiving added impetus after the results of the national elections were known. Industry as a whole passed through much the same experience in 1898.

[19] *Railway Age*, November 6, 1903, p. 639.
[20] *ibid.*, December 25, 1903, p. 895.

Great prosperity prevailed generally through the following year, but during the first eight months of 1900 the volume of railway purchases was again materially curtailed. All business activity slackened at this time, being influenced in the spring by the collapse of stock market values. Railroad buying was one of the first phases of business to recover. A comparison of the order data with various indexes of business suggests that it was a month or so in advance of trade and industrial expansion as a whole.

In common with business generally, the railway equipment companies were highly prosperous during 1901 and 1902. In fact they did not lack for work through the first six or eight months of 1903. But it is clear that beginning with the last quarter of 1902 they began to place decreasing amounts of new business on their books. Quantity production was maintained only as a result of old orders.[21] The evidence is to the effect that the downswing of business as a whole commenced in the late summer of 1903. The decline in railroad purchasing preceded this recession by at least six months.

[21] Roughly speaking, 50 per cent more freight cars were built during 1903 than the number ordered during that period. *Railway Age,* January 1, 1904, p. 3.

CHAPTER IX

PROSPERITY AND PANIC, 1904-1907

I. COMMERCIAL AND INDUSTRIAL ACTIVITY

The business depression which characterized the closing months of 1903 continued until the fall of 1904. As a result of sharp cuts in the prices of steel products made in August and September, consumption was stimulated and "a greatly improved tone developed in the trade." Numerous strikes existing or threatening terminated, or were averted in September. By October "evidences of a genuine and very pronounced revival of activity were visible on every side." [1]

During the years 1905 and 1906, the United States enjoyed unprecedented prosperity. Without exception our series of trades and production data set records only approached in previous years. As Mitchell says:

> The volume of both domestic and foreign trade and of industrial production expanded month after month (during 1905 and 1906), prices and wages rose rapidly, the railways were taxed beyond their capacity by the freight tendered, and the farmers were favored with abundant crops. On the whole, business prosperity seemed even more general and more intense than in 1899 or 1901. Not even such a disaster as the San Francisco fire caused more than a momentary pause in the activity.[2]

During the first part of 1907 trade and industry continued to maintain the feverish pace of 1905-1906, but the financial and speculative markets gave evidence of severe and increasing strain. The stock market underwent a spectacular decline in March, though most of the

[1] *Financial Review,* 1904, pp. 21-22.
[2] *Business Cycles,* pp. 74-75.

loss was recovered during the summer months. Money was tight throughout the year. With the closing of the Knickerbocker Trust Company in October, financial strain quickly developed into a nation-wide panic which was followed by the usual aftermath of depression.

PRODUCTION AND CONSUMPTION OF RAILS, 1903–1908 [a]

(In thousands of gross tons)

Year	Production	Imports	Exports	Apparent Consumption
1903.....	2,992	96.0	31.0	3,057
1904.....	2,285	38.0	416.0	1,906
1905.....	3,376	17.0	295.0	3,098
1906.....	3,978	5.0	328.0	3,655
1907.....	3,634	4.0	339.0	3,299
1908.....	1,921	2.0	197.0	1,726

[a] From American Iron and Steel Institute, *Annual Statistical Report*, 1913.

RAILROAD CONSTRUCTION, 1903–1908 [a]

(In thousands of miles)

Year	Line in Operation	Increase	
		In Line	In All Track
1903.....	207	4.4	11.4
1904.....	212	5.1	7.7
1905.....	217	4.9	6.0
1906.....	223	5.4	13.0
1907.....	228	5.4	11.1
1908.....	232	3.9	9.7

[a] *Poor's Manual of Railroads.*

The trade reviews reflect no recognition of the approaching depression until the very eve of the panic, but statistical data indicate clearly that the peak of prosperity was reached as early as July. During the late summer and early fall business was receding slowly, though activity was still decidedly above normal.

II. RAILWAY CONSTRUCTION

The tables on page 116 indicate that the depression of 1903 and 1904 had very little effect on the rate at which new railway line was constructed. In only one year since 1892 were so many miles of additional first track laid as in 1903, and 1904 showed a further increase. It is probable, however, that some of the mileage that went into operation in 1904 was constructed earlier. During this period, oddly, it was the rate of secondary track construction that was most affected by the decline in business activity. From a total of 7,000 miles of such track built in 1903 the record for 1905 fell to 1,100 miles. Presumably here, as in the case of first track, the comparatively small amount going into operation in 1905 reflects in part the decrease in building activity of the previous year. A high rate of construction reappeared later, then activity fell off with the strained conditions of 1907.

The data relative to rail consumption reflect, in pronounced fashion, the variations in the general business situation. There was a much sharper falling off in the apparent consumption of rails in 1904 than in the volume of railway construction. The discrepancy again suggests that a very substantial proportion of the rails produced in one year were laid the following year, or in any case that they were credited to the succeeding year's construction, possibly, as was suggested above, because new track was not "operated" until some time after it was laid. It is of interest to note that more rails were used in 1907 than in 1905.

III. RAILROAD EQUIPMENT ORDERS

1904. The order data indicate that, following the mild depression which characterized the latter part of

1903 and the first eight months of 1904, the railroads reëntered the equipment markets for the purchase of locomotive cars in the third quarter of 1904. The monthly data show that freight car buying was large during each month of that quarter, the revival of business occurring as early as July. It was not until September that there was any decided increase in new business for the passenger car builders. The same month witnessed an unmistakable expansion in the volume of locomotive sales also. The railroads delayed any substantial purchases of rails until November. In that month, and in December likewise, very large amounts were purchased, causing the quarterly total to assume large proportions.

The comments appearing in the trade periodicals confirm the statistics relative to orders.[3] The *Railway Age* said: "It is well known that almost no orders for equipment were placed during the first eight months of the year."[4] Similar statements appeared in the *Railroad Gazette*. "It is only since the early part of the fall that new orders have been coming in rapidly."[5] As late as the middle of August it was reported from Pittsburg that "business in standard sections appears to be about over for the season, some of the roads which bought for this year early last summer having even more rails than

[3] The quiet conditions which prevailed during the summer of 1904 are reflected in the words of a "prominent manufacturer" quoted in the *Railway Age:* "While in the West I interviewed a score of prospective buyers of railroad equipment, and everyone of them declared that little need be expected in the way of orders from railroads this year. The earnings of the railroads are too small, they say, to justify the statement that a heavy demand for steel rails will set in before the close of the year. Not a single order of importance has been placed in several weeks." August 19, 1904, p. 256.

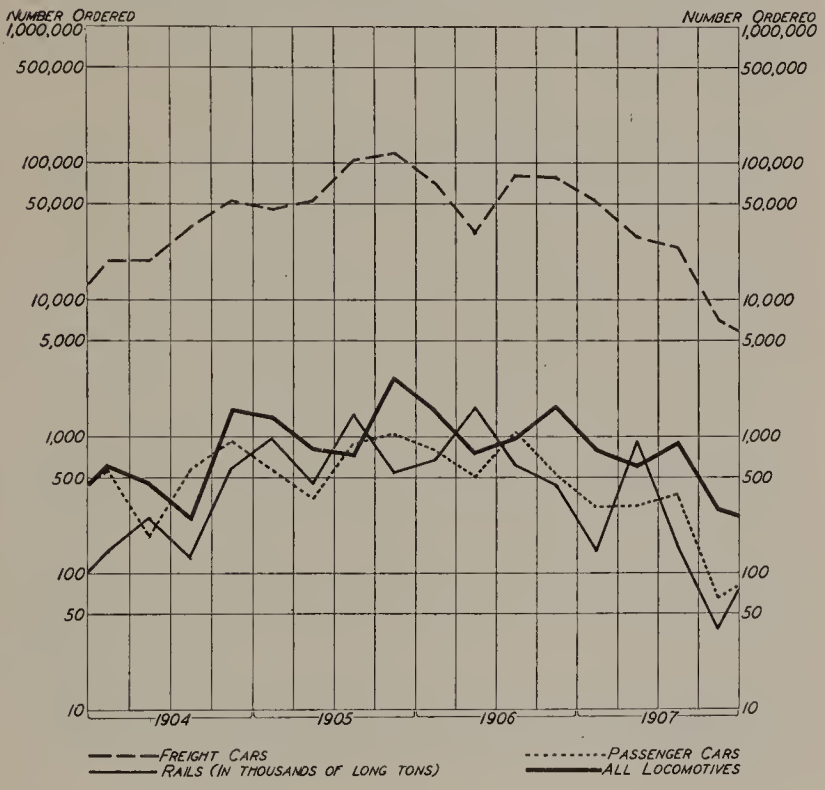
[4] January 6, 1905, p. 2.

[5] December 23, 1904, p. 653.

they can use.[6] Late in the year the *Iron Age* pointed out that the railroads had awaited the results of presidential election before buying rails.[7]

Trade reports on the equipment markets also dwelt on the great flow of orders that did develop once the

RAILWAY EQUIPMENT ORDERS, BY QUARTERS, 1904-1907



movement started. As was pointed out at the time, the volume of new business that set in with the early fall was so large as to force the year's totals well above those of the previous twelve months.[8]

[6] *Iron Age*, August 11, 1904.
[7] *ibid.*, December 30, 1904.
[8] Annual figures are given on page 229.

As to the time when railroad buying revived in comparison with the recovery of business generally, it is necessary to distinguish among different types of equipment. Large orders were placed for freight cars at least two months before business as a whole appeared to enter the recovery stage. A great revival of locomotive and passenger car buying occurred in September simultaneously with the trade revival. The rail trade was a laggard, and the upswing was well on its way before any substantial expansion of sales occurred in this field.[9]

1905. The year 1905 marked the peak of railroad buying for all time. More locomotives, more freight cars and more rails were purchased during that period than during any twelve months before or since. Passenger cars also sold in larger volume than in any other years except 1906 and 1909. The *Financial Review* said:

> In every direction they [the railroads] found themselves seriously cramped—track facilities insufficient, motive power inadequate and car supply woefully short. Had things followed a normal course during the preceding two years . . . . the situation would not of course have been so bad. As it was, the railroads overwhelmed manufacturers and supply houses with their orders. And the situation in that regard became intensified rather than relieved as the year progressed. No sooner was one lot of equipment received than it was necessary to give orders for a new lot. Towards the close of 1905 freight congestion on nearly all the leading lines of railroads was reported.[10]

In the first three months of 1905, 46,000 freight cars were bought; in the second three months, 53,000; in the third quarter 105,000; and in the last 118,000. A similar ascending scale of orders is shown in the case of passenger cars. In the case of locomotives, nearly

[9] The very small "consumption" of rails in 1904 checks with this delayed movement of orders.

[10] *Financial Review*, 1906, p. 11.

double the number purchased in the first quarter were bought the last quarter. For rails, the third quarter was the big one. In spite of the huge sales during the period from January to June, the amount of rails ordered during the next three months exceeded the best previous record by nearly 400,000 tons.

1906. The tremendous volume of orders that the railroads had placed with equipment builders during the latter months of 1905 caused those concerns to enter the new year with their order books overflowing. Every manufacturer of railway equipment experienced the pressure of unprecedented demand, and deliveries were delayed for many months. On January 5, the *Railway Age* declared that the Illinois Steel Company had sufficient orders to keep its entire plant in operation for 15 months, while the United States Steel Corporation was credited with unfilled orders for 1,800,000 tons of steel rails. The *Railroad Gazette* drew attention to an order placed by the Southern Railway for 10,029 cars. "The first deliveries from any of the builders are to begin in March, and deliveries of steel gondolas by the Standard Steel Car Company are not to begin until October, 1906." [11]

In spite of these conditions, new orders for rolling stock continued to flow in during the first quarter of the year at a rate never before equalled for a corresponding period. The rolling mills previously had received larger orders only in the first quarters of 1897 and 1905. During the following three months—April, May, and June, 1906—all previous records were again broken in the sales of rails to the carriers. During that time the orders

[11] January 12, 1906, p. 26.

which came to the attention of the magazine reporters totaled more than 1,600,000 tons.

Rolling stock, however, was purchased much less freely for a period of three or four months after March. The volume of orders for locomotives and freight cars fell off very markedly, those for passenger cars not so much. The *Gazette* accounted for this decline as follows: "The demand eased off late last spring, chiefly because of high prices and the fact that all the works were booked to their full capacity for six or eight months ahead, making it impossible to give deliveries for immediate needs."[12] Illustrative of the extent to which the builders' books were filled with orders was the statement in the annual report of the American Car and Foundry Company that orders on hand at the beginning of the new year (May 1) amounted to 71,369 cars against 44,000 the year before.[13]

But the pause in the buying activity of the railroads was very brief. By the end of the summer new orders began to flow in to the car and locomotive builders in large volume, and the record made during the last half of 1906 had been exceeded only in the corresponding period of the previous year. In the last week of December it was reported that most of the car companies had more cars on order than had been built during the entire year.[14]

1907. Purchases of railway equipment were smaller during the first half of 1907 than during the corre-

[12] *Railroad Gazette,* December 28, 1906, p. 565.
[13] *ibid.,* July 13, 1906, p. 28.
[14] *Railroad Gazette,* December 28, 1906, p. 27. Yet in this same editorial the writer spoke about the "car famine of the last two months," and an editorial in the *Railway Age* of the same date (p. 802) commented on the "Car Shortage Hearings" then being held before the Interstate Commerce Commission.

sponding periods of 1905 and 1906. Sales of passenger cars and of rails declined 50 per cent, and there was a shrinkage, though less marked, in freight car and locomotive purchases. Furthermore, in the case of rails, the manufacturers admitted as early as the first week in March that the roads were making " some adjustments in shipments " and that there was " some postponement in deliveries." [15] Evidently the roads were beginning to retrench in their demand for rails before the end of the first quarter.

The check upon improvements and extensions that had occurred was charged against " two adverse influences." One was the excessive cost of everything, associated with the fact that " all business has been going at high pressure so long that many believe a reaction to be overdue." The other cause, which was declared to be of greater effect, was the " blatant hostility towards capital invested in railroad enterprises." [16] In this latter regard, the then current point of view of a large number of railroad officials is illustrated by a statement credited to a man associated with the Chicago, Milwaukee, and St. Paul system. Replying to a question about a proposed extension he said ". . . . no such line will be built this year, nor will the construction of this or any other new line be undertaken until there is a cessation of that hostile sentiment which seems determined to reduce to a minimum the value of present railroad securities and annihilate all demands for new ones." [17]

[15] *Iron Trade Review,* March 7, 1907, p. 355. But a week later there was an account of some roads which were making insistent demands for early shipments.

[16] *Railway Age,* March 22, 1907, p. 372.

[17] *Railroad Gazette,* March 15, 1907, p. 324.

Orders for locomotives increased during the third quarter, and the monthly data show that the new business was well distributed throughout the three months. On the other hand, the railroads nearly disappeared from the passenger and freight car markets after July, while sales of rails had dropped off to insignificant figures at the end of May.[18] In the last quarter of the year buying practically ceased.

Comments appearing in the trade organs testify to the withdrawal of the railroads from the markets early in the summer. In December both the *Gazette* and the *Railway Age* stated that many of the mills were running on orders received in the spring, very few having been received since that time.[19]

Both the car builders and the locomotive builders were fortunate in one respect, namely, that few orders were cancelled. For example:

> Last spring when the financial situation became acute and the railroads as well as the industrial corporations began to feel the effects of hard times, it was generally expected that many of the large orders for cars to be delivered during the last months of the year would be cancelled. New orders dropped off to very small figures but few standing orders were actually cancelled

[18] Much of the new business booked during the early part of 1907 amounted to little more than the tentative procurement of priority on the books of the rail makers. Most of the transactions were not "sales" but "reservations." These did not lead to the actual rolling of rails until the buyers had filed specifications. During 1907, especially in the fall months, the railroads took full advantage of this situation in order to delay shipments. The October and November issues of the *Iron Age* and the *Iron Trade Review* gave much attention to the difficulties the roads and builders were having in trying to reach agreement relative to specifications.

[19] *Railroad Gazette,* December 27, 1907, p. 767; *Railway Age,* same date, p. 904.

and the car and locomotive builders have continued through the year working practically to their full capacity.[20]

IV. SUMMARY

In brief summary, the business revival in September, 1904, was preceded by two months by a vigorous recovery of freight car purchasing. It does not appear that the upswing of business at that time was anticipated by the railroads in their purchases of other types of equipment. Indeed, in the case of rails, the business revival was well on its way before the roads reëntered the markets in any numbers. But three years later, when the period of prosperity was approaching an end, the curve of railroad purchasing turned down sharply much in advance of the time when trade and industry as a whole ran into a serious decline. Aside from the purchasing of locomotives, railroad buying had almost ceased before business and finance collapsed in November, 1907. Orders for new equipment decreased in volume almost from the first of that year. Practically no sales of rails occurred after May, and two months later the freight and passenger car markets had become as quiet. In a word, the slight recession of business activity which occurred in August was preceded several months by a recession of railroad buying, and, similarly, the collapse of business in the late fall was antedated several months by an almost complete cessation of railroad buying.

[20] *Railroad Gazette,* December 27, 1907, p. 767. Similar testimony to the willingness of the carriers to abide by their contracts for rolling stock is given in the above quotation from the *Railway Age*. On the other hand, on May 29, the *Railway Age* stated that the Wabash had cancelled 300 box and 3,500 steel hopper cars ordered from the American Car and Foundry Company early in the year.

CHAPTER X

MODERATE PROSPERITY AND MILD DEPRESSION, 1908-1914

The seven years following the panic of 1907 were not characterized by the amazing activity and buoyancy that had been such a marked feature of the era with which the new century had opened. In contrast with the youthful enthusiasm and high confidence of that earlier period, the business community seemed to have become suddenly middle-aged, with a temper neither hot nor cold. Defiance of public opinion gave way to careful attempts to placate the public, and for a program of expansion there was substituted one of strengthening positions already gained. Business did not attain a high pitch, yet it avoided serious trouble. It was a period of adjustment and slow progress.

The selected series of annual data in the table entitled "Economic Activity" (Appendix B, page 281) reflects the spirit of the times. Every group of statistics, except those on immigration, points to increasing commercial and industrial activity, but in each case the growth is irregular and uninteresting. Note, for example, the moderate expansion in the carriers' business. During the six years from 1907 to 1913 (omitting 1914 as a year of acute depression), the volume of freight traffic increased by almost exactly the same amount as in the four years from 1903 to 1907. Merchandise imports grew from 1903 to 1907 by 428 millions of dollars; from 1907 to 1913 by 369 millions. The level of wholesale

prices rose twelve points in the earlier as against four points in the later, longer period.[1]

We may summarize the business trends of the periods as follows: The period of depression, which prevailed at the opening of 1908, gave way in the third quarter of the year to a recovery which flowered into moderate prosperity with the third quarter of 1909. This stage of the cycle extended over approximately ten months. Recession set in during the second quarter of 1910, and by July business had relapsed into depression. This reaction was mild and was of short duration, lasting approximately 18 months. The first three months of 1912 constituted a period of recovery, which was followed in turn by approximately one year of prosperity. Business activity underwent another gradual decline during the second and third quarters of 1913. The recession became sufficiently acute during the last quarter of the year to be deserving of the name depression. Through the first half of 1914 trade and industry became increasingly dull. The effects of the opening of the Great War are considered in Chapter XI.

I. RAILWAY EQUIPMENT ORDERS

1908. The railroads purchased less equipment in 1908 than during any similar period for eleven years. Even during the depression year 1904 the amount of rolling stock ordered was more than double that taken in 1908. A total of 52,000 freight cars were bought in 1908, in contrast with the orders for 322,000 freight cars placed in 1905. One cause of this sharp falling off in purchases is disclosed in the statistics regarding car

[1] If comparisons were made on a basis of 1901-1907 growth instead of 1903-1907, the contrasts would be even more striking.

surpluses and car shortages whieh were eompiled by a eommittee of the American Railway Assoeiation. On October 30, 1907, the committee reported a net shortage of 87,000 freight cars; one year later it reported a net surplus of 100,000 cars.

For the larger portion of the year the rail market was almost totally inactive. In January the steel manufaeturers were reported to have said that their correspondence with the railroads with reference to new orders had been "extraordinarily large" during Deeember, but it had not been very fruitful of orders.[2] In February unusual publicity was given to a moderate sized order of 55,000 tons of steel rails for 1908 delivery plaeed by the Pennsylvania Railroad, the first considerable order that had been negotiated for months.[3] This was probably a filing of specifieations on an old order, however.[4]

As an index of railroad buying activity in 1908 the filing of a set of specifications had all the signifieanee of a sale. For instance, in September the *Iron Trade Review* referred to an order plaeed in February which had come to be regarded as "dead" but for which speeifieations were eventually received.[5]

As is explained elsewhere,[6] in the inquiry the attempt was made to elassify as sales only those agreements whieh resulted in the rolling of rails within a reasonable

[2] *Railroad Gazette,* January 10, 1908, p. 43.

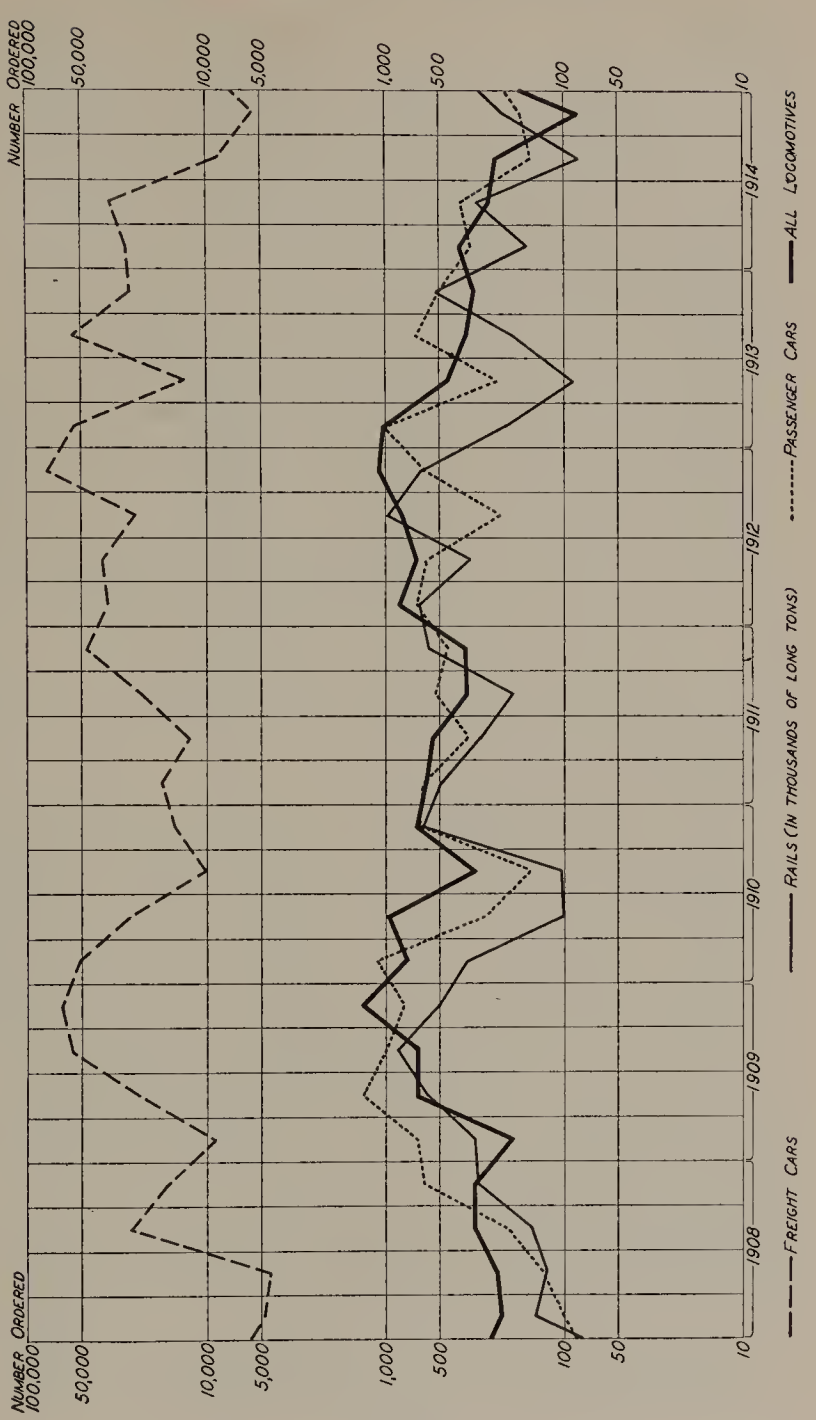
[3] *Railway Age,* February 14, 1908, p. 206.

[4] The *Iron Age* stated on September 24 that the Pennsylvania Railroad had placed no rail orders for 1908 at all and that it still had a fair sized surplus of new rails on hand. In the following month it explained that 50,000 tons of rails had been rolled for the Pennsylvania in 1908, up to that time, but on orders carried over from 1907.

[5] September 3, 1908, p. 369. Compare *Iron Age,* Sept. 17, 1908, p. 805.

[6] See pp. 19-21.

RAILWAY EQUIPMENT ORDERS, BY QUARTERS, 1908-1914



length of time. Compiled on that basis, the data indicate that the rolling mills received very little new business during the first three quarters of the year. This conclusion is in harmony with the statistics of "apparent consumption" of rails and those covering the number of miles of new line constructed.

Railway building and improvement did not wholly cease, however. The *Railroad Age Gazette* called attention in particular to developments in the West, saying that the year was "marked by the extraordinary spectacle of a new race to the Pacific Coast, participated in by the Chicago, Milwaukee, and St. Paul, the Gould lines, the Grand Trunk Pacific, the Canadian Northern and the Kansas City, Mexico, and Orient, with a sixth company—the Denver, Northwestern, and Pacific—carrying on an independent project with the avowed intention of going on to the Coast as soon as possible. . . ." [7]

This competitive activity brought no considerable amount of new business to the rail mills. But in the last quarter of 1908 [8] there was a relatively large increase in the volume of rail sales, presumably for 1909 delivery. Inasmuch as this accelerated rate of buying carried over into the next year it seems reasonable to view it as a distinct revival of business in this industry.

The trade reports contained some little evidence to the effect that the railroads were holding up the actual building of rolling stock in somewhat the same way as they were the rolling of rails. For instance, this item appeared in the spring of 1908: "The Pittsburg and Lake Erie has authorized the Standard Steel Car Com-

[7] Dec. 11, 1908, p. 1621.
[8] The bulk of the orders were placed in November.

pany to begin construction on 1,000 all-steel coke cars and 1,000 all-steel gondola cars. It is stated officially that this contract was placed last summer and has

PRODUCTION AND CONSUMPTION OF RAILS, 1908–1914 [a]

(In thousands of gross tons)

Year	Production	Imports	Exports	Apparent Consumption
1908.....	1,921	2.0	197	1,726
1909.....	3,024	2.0	300	2,726
1910.....	3,636	8.0	353	3,291
1911.....	2,823	3.0	421	2,405
1912.....	3,328	4.0	446	2,885
1913.....	3,503	10.0	461	3,053
1914.....	1,945	23.0	175	1,793

[a] For source see table on page 116.

RAILROAD CONSTRUCTION, 1908–1914

(In thousands of miles)

Year	Line in Operation [a]	Increase	
		In Line [a]	In All Track [b]
1907.....	227	5.1	5.4
1908.....	230	3.0	3.9
1909.....	235	4.9	6.3 [c]
1910.....	241	5.4	4.8 [c]
1911.....	246	5.4	3.5 [c]
1912.....	250	3.6	..
1913.....	253	3.6	..
1914.....	257	3.1	..

[a] From Interstate Commerce Commission.
[b] From *Poor's Manual of Railroads.*
[c] Including railroads constructed previously and reported this year for the first time.

been held up since." [9] A news item of the same character appeared in early November,[10] but such reports were infrequent.

[9] *Railway Age,* May 22, 1908, p. 750.
[10] *ibid.,* November 6, 1908.

Naturally, the volume of orders for freight cars during the first half of 1908 was small, only 9,000 units being purchased as against 81,000 during the corresponding months in 1907. There was, however, a decided expansion in sales of this type of rolling stock during the third quarter. Several very large orders were placed, including 5,000 cars purchased by the New York Central, 5,000 by the Harriman lines, and lots almost as large by the Wisconsin Central, the Milwaukee, and the Missouri Pacific. The flow of orders was well maintained during October and November, but during the following four months there came a distinct decline. In the spring of 1909 the buying movement was resumed. In spite of the apparent surplus of freight cars, it must be concluded that the industry manufacturing this type of rolling stock experienced a mild recovery during the third quarter of 1908.

The curve of sales of passenger cars leaves no doubt that business was improving all through the year in question. Every quarter witnessed an increase in sales and in the fourth quarter this expansion became very impressive.

There remains to be considered the record of orders for locomotives. There was no trace of a recovery in this industry. The aggregate of locomotives ordered during the fourth quarter was only a little larger than the number purchased in the fourth quarter of 1907, and the other three quarters had an even poorer record. A brief excerpt from a statement given out by James J. Hill in December indicates why the locomotive orders were so scanty, in some quarters at least. " The Great

Northern has 50 locomotives which have never had steam up. That shows how much equipment we're going to buy." [11]

1909. Aside from passenger cars, the revival of railroad activity in the equipment markets gained little headway during the first half of 1909. So far as locomotive buying was concerned there was no sign of improvement at all until the second quarter of the year, and even then the upswing of the order curve was not impressive. The rate of improvement in the freight car industry slackened in the first three months of 1909, but gained steadily from April on. The volume of rail orders continued to expand slowly. The *Railroad Age Gazette* pointed out, on January 1, that the year had begun with many "suspended" rail orders, the contracts held over being estimated to aggregate 700,000 tons. Specifications against these reservations continued to be filed for larger amounts, and new orders began to flow in more freely as the year progressed. The passenger car builders enjoyed phenomenal business throughout the year.

As was stated above, the railroads began to buy locomotives freely in the second quarter of 1909, and continued to make fairly large purchases throughout the summer and fall. The last quarter of the year was by far the best.

Freight car buying became very heavy in the third quarter and then showed another, but slight, gain in the final three months of the year. The *Railroad Age Gazette* pointed out that "the railways did not get to buying very largely in the first half of the year," but that "the

[11] *Railroad Age Gazette,* December 11, 1908, p. 1547.

orders placed during the last half of 1909 compare very favorably with the orders placed in previous years." [12]

The prosperous conditions that prevailed among the rail makers, and the builders of rolling stock too, is attested by the trade comment as well as by the order data. In July the *Gazette* said: "There has been a brisk movement in rail orders lately and the railways have certainly been supporting the mills through orders for both locomotives and cars." [13] The rail contracts placed in September were declared to have been the heaviest in one month for two years,[14] and on November 5, "the plate mills and other railway materials mills" were reported as "still unable to supply the demand." [15]

The recovery of railroad buying began in freight and passenger cars in the third quarter of 1908, in rails in the fourth quarter of that year, and in locomotives in the second quarter of 1909. By the close of 1909 it developed into a mild phase of prosperity.

1910. This period of prosperity for these industries proved to be of very brief duration. Rail sales slid off in a remarkable fashion as early as February, 1910, two-thirds of the orders credited to the first quarter being placed during January.[16] New business in rails fell to exceedingly low levels in the second and third quarters. Passenger car orders climbed to great heights in the first quarter, most of the sales being made in March, but the succeeding quarters were almost barren

[12] December 31, 1909, p. 1271.
[13] *ibid.*, July 16, 1909, p. 129.
[14] *ibid.*, October 8, 1909, p. 665.
[15] *ibid.*, p. 900.
[16] On January 21 the *Railway Age Gazette* said that there was "greater activity in the steel business than since the height in 1907," and on January 6 the *Iron Trade Review* remarked that very heavy specifications were being filed against old rail contracts.

of orders. Freight cars were purchased in fairly large volume during the first three months of the year, but sales fell off almost 50 per cent in the next quarter, and in the third only 10,000 cars were purchased. Locomotives were purchased in relatively larger volume than any other type of equipment during the second quarter of 1910, this period registering an appreciable gain over the previous quarter, but buying in this field declined with the approach of summer.

Much the same story is told in the trade comment. During February remarks appeared relative to the activity of the railroads in the equipment markets. But by June congratulatory comments on current conditions had changed to hopeful forecasts regarding the future: "It is expected," said the *Railway Age Gazette*,[17] "that the temporary understanding that has been arrived at between the government and the railways in relation to the proposed increase of freight rates will encourage the railways to go ahead with improvements and extensions. Some small orders have been placed during the past few days and the indications are that they will be followed by large ones."[18] However, on September 2 it was led to say: "Railway buying continues to be for immediate requirements only," and on the last day of that month this statement appeared: "Notwithstanding the assurances of Chairman Gary it is admitted that the steel trade is not in good shape, not from any inherent weakness in the industry itself nor general business conditions, but rather due to the policy of the railways, by whom little buying is being done."

[17] June 10, p. 1441.
[18] June 10, 1910, p. 1441.

Yet in spite of the very small volume of orders placed for rails during the greater portion of 1910, the statistics relative to the tonnage of rails produced and those of the construction of new mileage indicate that the rolling mills must have been reasonably active during the year. These data are not in conflict with the evidence offered by the data on orders, for production tended to lag behind rail purchasing by many months. A glance at the order data covering the last two quarters of 1909 will show the possibilities of increased rail production in 1910. During that time our compilations show that nearly 1,400,000 tons of rails were purchased. In the first three quarters of 1910 less than 600,000 tons were ordered.

Railway buying again became very active in the last quarter of 1910, especially in passenger cars and in rails. Indeed, in the case of rails the volume of purchases exceeded the high level of the last quarter of 1909.

1911. The upward movement was not sustained after the opening of the new year, and although railway purchasing was in fairly large volume during the first quarter, with the exception of freight cars, it would be incorrect to say that there was a return of real prosperity to the equipment industries. It was a period of large expectations but only partial fulfillment. Towards the end of the winter it was reported that the buying of the railways was " exceptionally low," [19] and a month later the steel industry had shown no change but large orders were expected. [20] A week later the railways were " beginning to place heavier orders," but on May 12 the

[19] *Railway Age Gazette,* March 31, 1911, p. 817.
[20] *ibid.,* April 28, 1911, p. 1019.

usual expression reappeared, the railways then being "expected to place large orders," this time "toward the end of June."[21] During the next week in May there seems to have occurred a marked concentration of orders within a short space of time.[22]

Through the summer and the early fall months the reports continued to be much as they had been in the spring, but the last quarter of 1911 did bring an improvement. In fact, the data on orders show that purchases of freight cars increased very materially in September, the same being true of passenger cars also. On October 13, the report came out that the railways were "buying heavily." Similar reports appeared almost weekly during the last three months of the year although there was complaint at first that this purchasing movement did not include rails. But on November 17 it was stated that "rail and plate buying" had shown large increases, and succeeding reports pointed to moderately increased activity in this field. The volume of orders, except for freight cars, was materially less than during the corresponding period of 1910, but there was undoubtedly a new buying movement in progress as the year came to a close.

Surveying 1911 as a whole the *Gazette* said: "Railway men will see 1911 pass into history without any regret. . . . It has been in many respects one of the worst twelve months in the annals of the railways of

[21] *ibid.*, May 12, 1911, p. 1137.

[22] The *Gazette* said: "The railways placed larger orders last week than in any week since the first of April." The news writer, however, commented: "The improvement is regarded as temporary as these orders are only for vital requirements." So far as freight cars were concerned, these urgent needs could not have been very pressing because on April 12 there was a reported net surplus of 186,000 cars. On April 13, 1910, the net surplus had been less than 75,000.

the United States. All through it permanent improvements on most lines were restricted and as for new construction it was almost the body of death itself." [23] This was an exaggeration, however. While it is true that the year as a whole was one of depressed business for the rolling stock and rail manufacturers, it was far better than 1908 had been. The depression was not acute in the sense that the term might be used with reference to the midde nineties. The circumstances that caused 1911 to appear to be such an exceedingly unfavorable year was the fact that railway buying had been declining ever since the closing weeks of 1909. Furthermore, the prosperity that marked the year 1909 had been of a moderate character and very brief. Thus by 1911 the ill-fortune of the equipment builders, though not very pronounced, was of long standing. It was the cumulation of trouble that made the picture so dark.[24]

1912. With the opening of the year 1912, the revival of buying activity of the railroads became more intense, and spread to the locomotive and passenger car markets. The rail-makers, especially, found business good. On January 5, the *Railway Age Gazette* said that the rolling mills had "enough orders on their books to insure capacity operations for about four months." But the upswing did not continue uninterruptedly in the case of any of the four types of equipment, and the volume of new business for the freight car manufacturers moved generally downward until the fourth quarter. Orders

[23] *ibid.,* December 29, 1911, p. 1304.

[24] The financial press, and the railway and iron trade journals laid the woes of the railways, and indirectly of the steel manufacturers too, at the doors of Congress and of the Interstate Commerce Commission. Compare Mitchell, *Business Cycles,* pp. 84-85.

for rails, locomotives and passenger cars fell off during the second quarter. Both freight and passenger car purchases declined still more during the third quarter, but there was a tremendous rise in the orders for rails. It is necessary to go back to 1906 to find any quarter whose record of rail orders was as large. As late as June 14 the *Gazette* said, in referring to the steel industry: "Since the first of June less new business is coming from the railways." But a month later the situation was quite different: "The volume of orders is large, particularly on the part of the railways. The rail orders on the books of the various companies are larger than they have been for five years. One company was even forced to refuse a 6,000 ton rail order on account of the congested condition of its mills. The rail mills of the steel corporation are operating at full capacity, and the orders on hand are sufficient to keep them running at the same pace for the balance of the year." [25]

In October the *Gazette* declared that the railroads were continuing to buy heavily, and that the mills had orders on their books to keep them operating at a high rate of capacity through the first six months of 1913. At about the same time the *Iron Age* announced: "Rail orders already closed for 1913 are nearly 1,400,000 tons, a record tonnage at this date." [26] It was not until December that either the trade reports or the order data gave any signs of a falling off in the volume of new business in rails.

The roads did not purchase rolling stock freely during 1912. Relatively speaking, locomotives were purchased in largest quantities. The sales of cars, both freight and

[25] *ibid.*, July 12, 1911, p. 78.
[26] October 24, 1912, p. 980.

passenger, recovered in the last three months of the year, with the result that more freight cars were purchased during that period than in any similar period for seven years.[27]

Regarding the year as a whole the *Gazette* said: "The buying movement has been most satisfactory throughout the year in spite of the prices which are now higher than they have been since 1906."[28]

Our conclusion is that railway buying recovered in the fourth quarter of 1911, gained in strength as the year 1912 progressed, and reached prosperity levels in the fourth quarter of the latter year. But the rise in the order curves was not as clear cut nor as regular as in most previous revivals. Each of the curves declined sharply at some time during the year, but these drops did not occur at the same time for the different types of equipment, and with rare exceptions each quarter's totals were much larger than those of corresponding quarters of 1911. There was no halt of sufficient extent or duration to be called a depression.

1913. The new year found the business of the railway equipment manufacturers in an extremely satisfactory condition. "A great many builders had orders on hand at the close of 1912, 200 per cent in excess of those on hand at the end of the year before."[29] But again the flow of orders did not continue for long. The sharp slump in rail orders, which began in December, per-

[27] The early autumn of the year 1912 had seen a growing scarcity of cars. By October 10, the 36,000 net car surplus of the year before had turned into a net shortage of nearly 32,000. This probably had something to do with the great wave of orders of that season.

[28] December 27, 1912, p. 1239. The annual data show that buying was on a larger scale than in any year since 1906.

[29] *ibid.*, January 2, 1914, p. 21.

sisted into January and during the first eight months of the year became more and more serious. In the case of the other types of equipment the recession did not occur quite so soon, new business in locomotives holding up very well until May. Orders for freight cars declined sharply in February and those for passenger cars at least as soon. By the end of the first quarter railroad buying had again become exceedingly restricted.

Comments in the trade press confirm the record furnished by the order statistics. In the early part of May the *Gazette* said: "The orders placed by the railroads are very small indeed, and the volume of orders pending is light. A heavy increase in orders for freight cars is expected in the near future to enable the railroads to handle the heavy fall traffic."[30] On July 11, orders on the part of the railroads were stated to be "exceptionally small"; a month later expectations were expressed that orders for equipment would show "a material increase in the future"; and at the end of September it was announced that the railroads were "beginning to enter the market again with large orders for 1914 requirements."

A fair volume of passenger and freight car orders was placed during the third quarter, and rail orders increased slightly in the fourth quarter, but the upward movement was short-lived and not of wide extent. Locomotive purchases decreased steadily with each succeeding quarter of the year. On November 14 the *Railway Age Gazette* said: "The railroads show no disposition to buy and no large rail orders are expected before the close of the year." The larger companies building rolling stock found that the unfilled orders on their books were

[30] May 2, 1913, p. 1013.

but from 10 to 30 per cent of those of the previous year.[31] In contrast to its closing months, signs of a recovery were entirely lacking. The trend was quite the other way.

1914. During the first half of 1914 the declining movement was checked, the flow of orders remaining fairly steady though at low levels. With the outbreak of war in Europe even this moderate activity ceased, and for the last six months of the year the railroads were practically out of the market for rolling stock. The rail trade was likewise exceedingly quiet though a slight recovery occurred in November and December.

II. CONCLUSION

Variations in the flow of railroad orders during this rather confusing period were frequent although not large. A revival of freight and passenger car buying occurred in the third quarter of 1908, followed by a recovery of rail buying in the fourth quarter. Locomotive sales did not show any appreciable improvement until the second quarter of 1909. The ensuing period of prosperity for the railway equipment builders was of short duration, terminating by the end of the first quarter of 1910 so far as rails and passenger cars were concerned, and at the end of the succeeding quarter in the case of freight cars and locomotives. The depression which followed came to a close in the last quarter of 1911, with marked increases in orders for rails and freight cars. Locomotives and passenger car buying—the latter having been well maintained all through 1911—showed pronounced expansion during the first weeks

[31] *ibid.,* January 2, 1914, p. 21. Rail orders had been reported for some time to be for immediate needs only.

of 1912. Again the prosperity phase proved to be brief. Rail buying slumped in December, 1912, followed in February by a similar sharp decline in freight car orders, and before the end of the second quarter of 1913 purchases of all types of equipment had become very light. This new depression persisted until the fourth quarter of 1914, when some slight signs of improvement began to appear in the rail market.

During the whole period between its recovery in the early winter of 1908-1909 and its abrupt decline in the fall of 1914, following the outbreak of the war in Europe, railroad buying activity failed to display the clear-cut variations that were fairly typical of previous years. There were very few quarters in which orders for all types of equipment were scanty, and very few quarters, likewise, in which the current trends of volume of new business in the different types were uniform. Nor did the movements persist uninterruptedly in any direction for long periods of time. Even in the "poorest" year the volume of new business continued at a fairly high level.

The changes in the volume of railroad purchasing coincided with, or slightly preceded, similar changes in the curve of general business activity. As a rule the increases or decreases in buying activity, which anticipated like variations in the volume of trade and industrial output, did not include all four types of equipment. But invariably there was a distinct turn in the sales of some one or more types from three to five months in advance of the major changes in the activity of business. The business revival which had its origin in the third quarter of 1908 was accompanied by a recovery of freight and passenger car buying. The downswing of

business during the second quarter of 1910 in freight car and passenger car buying was preceded by three months by a marked falling off in orders for rails. The last quarter of 1911 saw a distinct expansion in new business for the rail and freight car manufacturers, and the early weeks of the new year a like wave of locomotive and passenger car buying. Trade and industry as a whole recovered during the first six months of 1912. Finally, the business recession of the spring of 1913 began three to four months after orders for freight cars and rails had shown a sharp decline, and not before locomotive and passenger car buying had become very light.

CHAPTER XI

WORLD WAR, 1915-1918

The World War quite overshadowed every other fact, at home and abroad, during the period from 1915 to 1918. The tremendous and ever increasing demands of the Allied nations for munitions of war lifted the country out of a state of acute depression and placed it on a plane of prosperity never dreamed of before. Domestic needs were forced into the background as manufacturers strove to secure a portion of the lucrative war contracts which flowed into the United States in seemingly limitless volume.

The state of affairs was made still more abnormal by the entry of the United States itself into the war in the spring of 1917. That event not only greatly intensified the pressure on our factories, our transportation facilities, and our farms for every variety of military supply, but also rapidly depleted the ranks of labor and placed enormous strain on the financial machinery. Furthermore, the declaration of war brought in its wake a host of regulatory and restrictive measures designed to stimulate the output of goods suitable for war purposes. Although the government did not take possession of any existing major industry other than the railroads, it nevertheless maintained a large degree of control over all of them through the priority given to war orders, through control of prices, and through the services of numerous boards, newly created, such as the War Industries Board, the United States Food Administration, the United States Fuel Administra-

tion, the War Trade Board, the War Finance Corporation. Supervision was also exercised in the field of consumption. Great pressure was brought to bear on the consumer for the purpose of leading him to practice strict self-denial. Sugar bowls disappeared from the tables of public eating places, wheatless days and lightless nights became fashionable, pleasure riding on Sundays came under the ban, and many types of garments appeared in two or three styles instead of 20 or 30.

Amid this welter of government restrictions and of insistent and unprecedented war demands the usual effects of the play of economic forces were obliterated. Hence it would appear to be an unprofitable undertaking to try to map out the course of the cycle during the war years, either in business in general or railroad purchasing in particular. Our aim will be rather to note briefly the main industrial and commercial movements of the period and the circumstances surrounding the placing of domestic orders for railway equipment.

I. BUSINESS ACTIVITY AND THE WAR

Industry in this country began to offer outward evidence of the effects of the European war almost with the opening of the year 1915. The indexes of business activity, without exception, touch their lowest points in December, 1914, or in the following January, and tend steadily upward through 1915. This improvement was not due to an increase in consumptive demand at home. Regarding developments in February, 1915, the *Financial Review* said: "General business remained exceedingly quiet, but in the iron and steel industry work proceeded on an increasing scale under the growing

volume of war orders." [1] Concerning conditions in April the report was that "orders of huge dimensions for munitions of war, armaments, etc., were inducing not a few manufacturing concerns to turn from their ordinary lines of work, in which they had encountered so much idleness, to these new fields of industry. . . ." [2] Similar reports were made for all the spring and summer months. It was not until September that this periodical reported any signs of strengthening demand at home.[3] For the later months of the year it reported a further extension of business activity, although apparently still largely engendered by foreign purchasing. Except for munitions the year as a whole made only a slightly better record than 1914 as regards the volume of industrial output and trade activity. Great activity prevailed from the very beginning of 1916, and from month to month attained larger and larger proportions. "If there is one characteristic that stands out preeminently as distinguishing all the affairs of the year, it is that everything was of unprecedented magnitude. Both the country's internal and its external trade reached proportions never previously witnessed." [4] It was a year of spectacular developments. Rumors of war alternated with rumors of peace in producing violent price fluctuations.

Under the stimulus of war demands, the tremendous activity that had characterized the nation's industries in 1916 became even greater in 1917 and 1918 with our entrance into the great struggle. For both years the monthly index figures depict the first six or seven

[1] 1916, p. 21.
[2] *ibid.*, p. 26.
[3] *ibid.*, p. 46.
[4] *Financial Review*, 1917, p. 7.

months as a time of generally increasing activity which culminated in mid-summer peaks. During the remainder of the year the trend was sharply downward.

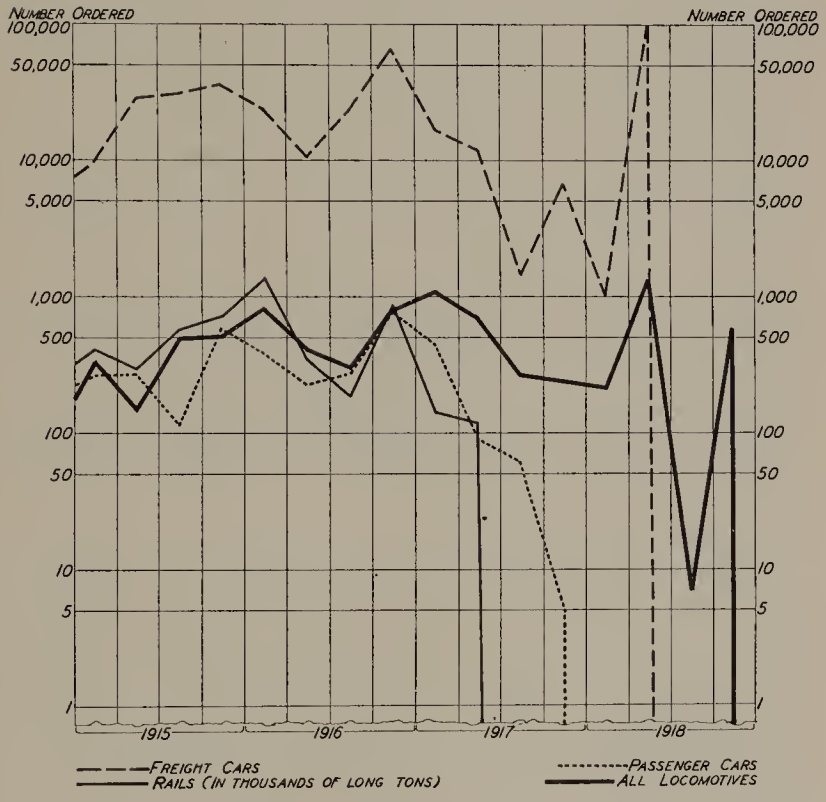
II. RAILROAD PURCHASING AND THE WAR

The railway equipment markets were sluggish during 1915, until early autumn. They recovered during the first quarter from the extremely low levels of activity reached in the last six months of the previous year, but there was no great display of activity. In the second quarter of the year locomotive and rail purchasing declined. There was more buoyancy in the passenger and freight car markets, but in neither industry did the volume of orders equal those that were placed during the corresponding period in 1914, which was itself a time of mild depression.

The testimony of the statistics bearing on orders is confirmed by other forms of evidence, namely, very small activity in the plants of the rolling stock companies and a low scale of prices for railway equipment. Late in February the *Railway Age Gazette,* in an editorial entitled "Buy It Now," urged the railroads to purchase their equipment during the current bad times, both for their own advantage and for that of business generally. The same appeal was repeated some two months later: "The market conditions were never so good in years as now for the purchase of cars and locomotives. . . . They [the builders] have made savings by partially or wholly closing their shops, but this only reduces their loss, as a large part of the overhead expense must continue. . . . If roads that are able to obtain the necessary capital purchase equipment now

they will make profitable investments." [5] In this same editorial it was admitted, however, that the railways had found it necessary to store a large number of engines and that the car surplus was unusually large. These

Railway Equipment Orders, by Quarters, 1915-1918



conditions were due, of course, to the prevalent depression of business generally.

An event which occurred during the first half of 1915 was observed with keen interest by railroads and rail makers alike. This was the invasion of our markets by the Algoma Steel Company of Canada, which quoted

[5] April 12, 1915, p. 432.

open hearth steel rails for delivery on this side of the line at $5 under our domestic price. The *Railway Age Gazette* said: "For the first time since 1901 steel rails are now being quoted openly at less than $28 per ton. . . .[6] The reasons why the Algoma Steel Company is able to quote this price on rails are evident. The European war has created a business depression in Canada much more acute than in the United States, with the result that the rail requirements of the Canadian railways are materially reduced. The steel company is therefore seeking new business at a reduced price to prevent the closing down of the mill."[7] At least three roads in the United States gave orders for rails to the Canadian company in February, and in March the Illinois Central purchased 35,000 tons from this source. The manufacturers on this side of the line were loud in their criticism of the railroads which patronized foreign markets, but refused to lower their price to meet the new competition.

The spring of 1915 was characterized by extravagant rumors of sales of railway equipment to foreign governments, particularly Russia. Unconfirmed reports of this nature began to appear as early as the first week in April. The stories grew as the month moved along and by May the Russian government was declared to have put out inquiries in this country for bridge steel and rails to the value of $100,000,000.[8] In addition that government was believed to be in the market for many thousands of units of rolling stock, tons of spikes and

[6] That figure was the "basic price" which had been maintained in the United States since the organization of the United States Steel Corporation.

[7] February 12, 1915, p. 253.

[8] *Railway Age Gazette,* May 7, 1915, p. 992.

enormous quantities of air brakes and other kinds of railway equipment. Rumors were also circulated regarding France, Italy, and other European nations.

Eventually large orders were placed by the governments of those countries. Russia purchased 22,000 cars and 400 locomotives during May and June, a small portion of these orders being given to Canadian plants,[9] and during the spring and summer orders for more than 200,000 tons of rails were credited to the same government.[10] Other European governments bought more sparingly.

Both the order data and the trade reports indicate that railroad purchasing at home took on new vigor toward the end of the third quarter of 1915. Locomotive orders showed large gains in July and August over the totals of the preceding months; orders for rails grew moderately during the same months; and in September there occurred an extraordinary increase in the purchases of all the major types of equipment. In its survey of events that took place during September the *Financial Review* said that "railroad buying was becoming a real factor."[11] This buying movement gained momentum during the succeeding months of the year. Nearly two-thirds of all the equipment purchased in 1915 was bought during the last three or four months.

Accompanying this increase in the volume of railroad purchasing was a like increase in the volume of trade and industry. The railroads suddenly found themselves

[9] *ibid.*, May 21, 1915, p. 1,097; June 18, 1915, p. 1,459.

[10] *Iron Trade Review*, issues of June 3, 1915, p. 1,093; August 5, 1915, p. 254; and September 2, 1915, p. 431.

[11] 1916, p. 46. The annual report of the Baldwin Locomotive Works for 1915 stated: "The railway supply business began to show improvement in August." *Railway Age Gazette*, February 18, 1916, p. 336.

confronted not with a surplus of rolling stock—a thing that had plagued them for more than two years—but a shortage that rapidly assumed alarming proportions.[12] Then when they turned to the car builders for relief, flooding them with an unexpected rush of orders, they were faced with uncertain and delayed deliveries. The inability of the car companies to make prompt delivery was not due so much to their own lack of productive capacity as to their inability to get steel. The abrupt recovery of general business in the fall of 1915 had been most apparent in the iron and steel industry. The sudden pressure of domestic orders came on top of a rapidly growing stream of war orders from the Allied governments, and the output of the steel manufacturers was requisitioned almost over night for months ahead. As early as November a prominent car builder estimated that less than two-thirds of the steel required for car contracts, then placed, could be delivered by July 1, 1916.[13] Of course manufacturers of other types of railway equipment than freight cars also suffered on account of this congestion in the steel mills, but it was felt most in that field because of the increasing shortage of cars.

The large tonnage of rails purchased in the latter part of 1915 was for 1916 delivery and was not reflected in amount of track constructed in 1915. Not since Civil War days had there been so little activity in that direction.

1916. Rail orders climbed to extraordinary heights during the first quarter of 1916. Orders for locomotives

[12] That this was due to freight congestion in Eastern cities caused by inadequate ocean transportation facilities, rather than to any actual lack of freight cars, did not make it any the less real.

[13] *Railway Age Gazette,* November 26, 1915, p. 992.

also touched relatively high levels, but they did not make the spectacular gain which rail orders did. On the other hand, the volume of freight and passenger car sales declined during the first quarter of 1916, and continued to move downward during the next quarter of the year as well.

The large sales of rails were, in very considerable part, for delivery twelve months in the future. The rail manufacturers urged that in order to assure themselves of rail deliveries in the spring of 1917 the roads should make reservations of tonnage at once. This advice undoubtedly proved effective, but the willingness of the steel mills to negotiate sales for 1917 delivery at the old basic price of $28 probably was at least as vital a factor. Quotations on other steel products had already risen and were being pushed up rapidly week by week and it seemed apparent that it was only a matter of time before steel rail prices would be advanced also.[14] Whatever may have been the relative potency of these two reasons for buying, by the end of March the roads had put 900,000 tons or more on the order books of the steel mills for 1917 rollings.[15]

Sales of all types of rolling stock and of rails declined during the summer of 1916 but were resumed on a large scale again in the late fall. Cars and locomotives were purchased in far greater numbers than during the corresponding period of the year before.

The new wave of buying that set in during the fall of 1916 seems to have been occasioned by two circumstances: the belief that the current prosperity era was

[14] As it turned out the basic quotation was raised $5 per ton on May 1, 1916, and another advance of $5 was made the following November. Later, steel rail prices soared to much greater heights.
[15] *Iron Age,* March 30, 1916, p. 798.

to be of some duration, and the growing congestion of traffic. The popular notion of a speedy ending of the war had been upset, and it had become apparent that, whatever the long-run effects might prove to be, so long as the war continued this country was going to enjoy an almost limitless market for its products. The increasing difficulties that the roads were experiencing in handling the available traffic was evidenced by the figures on car shortages. Beginning with the report of August 1, 1916, the published compilations indicated that all previous traffic records were being broken, and as successive reports were issued, old records of car shortages were exceeded by increasing margins.

These circumstances impelled the roads to place heavy orders for all types of equipment during the last four months of 1916, in spite of high prices and slow deliveries. In October the *Railway Age Gazette* quoted builders as saying that cars ordered then could not be completed before the second quarter of 1917, if then, and that much equipment being currently delivered had been ordered eleven months before.[16] The New York Central placed an order for 230 locomotives in September for delivery 14 months later.[17]

1917. With the incoming of the new year locomotive purchases continued to increase, but orders for all other types of equipment took an abrupt drop. A glance at the curves depicting the course of railway purchasing will show that locomotives had not been purchased in as large numbers, relatively, as other types of equipment during 1915 and the first part of 1916. But the large orders placed in the latter part of 1916 and the first half

[16] October 6, 1916, p. 582.
[17] *ibid.*, November 24, 1916, p. 926.

of 1917 easily made up for this deficiency. As early as February the *Railway Age Gazette* stated that the locomotive plants were filled up with orders for nearly a year ahead,[18] and in May it published this item, relative to conditions in the principal shops of the Pennsylvania Railroad: "The total locomotives at present on order at Altoona amount to 455, a number more than sufficient to keep the locomotive shop running to fullest capacity during the remainder of the present year and during the year 1918."[19]

The same accumulation of orders appeared on the books of the rail makers and undoubtedly accounts in part for the falling off in new business, although the high quotations were also a factor.[20] At the close of 1918 it was estimated that 1,000,000 tons of rails had been contracted for 1918 delivery.[21]

The situation among the car builders was quite the reverse of this. In an editorial appearing in its issue of May 18, the *Railway Age Gazette,* after pointing out that the locomotive builders were tied up with new orders possibly beyond the first quarter of 1918, stated that the car builders were "not particularly busy" and that deliveries on cars were "almost normal." In explanation of this comparative quietness in the face of record breaking figures of car shortages it said: "There can be little doubt in this connection that railway men believe that the car shortage has been rather a matter of congestion than actual lack of cars."

[18] February 23, 1917, p. 297.
[19] *ibid.,* May 25, 1917, p. 1119.
[20] The *Iron Trade Review* in its issue of June 26, 1917, reported that odd lots of rails were selling as high as $100 a ton.
[21] *Iron Trade Review,* January 18, 1917, p. 177.

With the entry of this nation into the World War, on April 6, 1917, a new factor was injected into the railway equipment market. The government began almost at once to place large orders for rails and rolling stock for shipment to France. Before the close of November it had purchased more than 2,000 locomotives and nearly 22,000 freight cars.

Domestic orders for railway equipment did not expand toward the end of 1917, as had been true of the two previous years. Indeed the railroads practically disappeared from the markets. As the year approached its close it became increasingly plain that the government would sooner or later assume control of the railroads and manage them as a unit.[22] The railroad officials naturally were inclined to await the outcome of this move before making any further purchases. Aside from locomotives, all types of equipment were bought in small quantities during 1917.

1918. In the following year railway equipment orders placed by the government dominated the markets—in fact no important orders from any other source were put on the books. Purchases of rolling stock and rails for domestic purposes were made by the United States Railroad Administration. Aside from 25 locomotives contracted for in January, no rolling stock was ordered immediately, however, as it was decided to design standard equipment before making extensive purchases. Specifications for freight cars were not approved until March. Those for locomotives were agreed upon in April, but specifications for standard passenger cars, baggage cars, etc., were not issued until January, 1919. Shortly after

[22] The government formally took over the control of the railroads on December 28, 1917.

the Director-General had approved the designs for the standard freight cars, orders for 99,500 units were distributed among the various builders. These orders were placed on the first day of May. Contracts for 1,270 standard locomotives had been signed the day before. During June, 60 additional locomotives were ordered by the Railroad Administration, 70 more in October, and in November orders were placed for 525 locomotives, this time for 1919 delivery. This rolling stock was placed in service on the lines where the need was greatest, irrespective of ownership.[23] Additional lots of equipment were obtained for the use of the military forces in France. In February, 5,000 freight cars were ordered for this purpose, followed by two more orders in July of 10,000 cars and 20,000 cars, respectively. In the same month 1,100 locomotives were purchased for shipment to France. Then in September the War Department placed additional orders for 1,500 locomotives and 40,000 freight cars, but these were cancelled after the signing of the Armistice and before any of them were constructed.

The Railroad Administration did not complete negotiations for any rails during 1918, because of a disagreement over prices with the price fixing committee of the War Industries Board.[24] This, of course, did not mean that the mills stopped rolling rails, because their great accumulation of orders provided them with more business than they could handle conveniently. Although the Railroad Administration itself placed no orders it

[23] During the entire period of government control of the railroads, 99,966 freight cars and 2,064 locomotives were built for the United States Railroad Administration. A complete statement of these orders is given in Appendix F.

[24] *Railway Age,* November 22, 1918, p. 919.

took over the distribution of the rails already on the books of the steel manufacturers, as fast as they were rolled.

Judged by pre-war standards, the output of rails was not extraordinarily large. But the productive capacity of the mills was increasingly absorbed by the necessity

RAIL STATISTICS, 1914–1918 [a]
(In thousands of gross tons)

Year	Production	Imports	Exports	Apparent Consumption
1914.....	1,945	23	175	1,793
1915.....	2,204	78	391	1,891
1916.....	2,855	26	541	2,340
1917.....	2,944	9	513	2,441
1918.....	2,541	9	454	2,096

[a] For sources, see table on page 116.

ANNUAL RAILWAY CONSTRUCTION [a]
(In miles)

Year	Main Line	All Track
1914.....	1,532	2,127
1915.....	933	1,354
1916.....	1,098	1,442
1917.....	979	1,656
1918.....	721	1,538

[a] From *Railway Age.*

of making shells and other war munitions, so that the rail orders were much larger in proportion to the available capacity than normally would have been the case, and they had to take their turn in being filled along with competing war orders. Moreover, foreign orders were of considerable volume.

Most of the domestic rail consumption was for renewal purposes. During 1918, the first twelve-month period

of government operation, the amount used for renewals equalled about 1,100,000 tons,[25] as compared with 1,350,000 tons which had been directed to that use annually during the three-year test period. Some rails went into new line, although there was a net decrease in the number of miles of main line in operation.

[25] *Railway Age,* June 6, 1919, p. 1383. The government was, of course, obligated eventually to provide sufficient tonnage for replacement purposes for the years 1918 and 1919 to equal the average annual amount so used during the test period.

CHAPTER XII

READJUSTMENT AND PROSPERITY, 1919-1926

Information relative to the movements of trade and industry in the United States since the Armistice is as voluminous and as readily available as it is meager and difficult of access for earlier periods. Partly as a cause and partly as a result of this mass of information, the study of the movements of the business cycle has received a great impetus. As a consequence the course of business since the war has been carefully plotted by various observers and its developments are a familiar story. Hence the sketching of a brief outline of the period from 1919 to 1926 will, for the most part, suffice for our purposes.

The year 1919 opened with the business community in an uncertain and hesitant frame of mind. It was generally accepted that a period of readjustment was inevitable, but the most divergent views were held as to its probable character and extent. It was generally believed that the demobilization of military and naval forces was bound to create a period of unemployment, but as to whether this would be accompanied by a return of prices to the pre-war level and a general cessation of production there was no agreement. During the early weeks of the year, therefore, industrialists and traders generally adopted a policy of caution. For two months the volume of trade declined sharply, industrial output was curtailed and prices fell. These conditions were, however, of brief duration. By March an appreciable improvement

was noted and by May the recovery was gaining momentum with extraordinary rapidity. By the beginning of the third quarter activity was distinctly above normal and the year closed with trade and industrial activity at fever heat.

Recession did not begin until the second quarter of 1920. Wholesale prices reached their peak in May and all indexes of business activity record a rapid decline through the summer and fall. The close of 1920 found the country in the grip of a severe depression. The low point was reached in the summer, but recovery during the fall was very slow. Not until the early weeks of 1922 was it apparent that the great post-war depression was over. Throughout 1922 prices and business activity tended upward and in the first five months of 1923 the upward movement began to assume the proportions of a boom.

But before the situation got out of hand the rising movement reversed itself and the last seven months of 1923 constituted a period of moderate recession. Current opinion was to the effect that the curtailment of activity was due to a spirit of extraordinary caution that permeated the business community rather than to a falling off in consumer demand, although it was held that the recession was "not, of course, to be accounted for solely on the ground that business men were the victims of their fears." [1]

The decline in output and distribution during 1923 was neither rapid nor of large proportions, and the year taken as a whole was "one of unparalleled industrial and trade activity."

[1] Compare *Review of Economic Statistics,* October, 1923, p. 263; *Federal Reserve Bulletin,* January, 1924, p. 4.

During January and February of 1924 the recessive movement was interrupted after which it was resumed at an accelerated rate. "Pronounced recession in important branches of business and industrial activity characterized the second quarter of 1924."[2] But the mild depression that set in at that time was of very short duration. Practically all of the indexes of business conditions touched their low points in June or July. A recovery movement commenced during the third quarter and, although not rapid at first, gained momentum in the closing months of the year. By the opening of 1925 general prosperity again prevailed throughout the country.

1925-1926. The prosperity phase which had its inception at the opening of 1925 continued throughout that and the following year without any serious interruptions. The *Federal Reserve Bulletin* pointed out that when all lines of activity were taken into consideration trade and industry were in larger volume in 1925 than in any previous year.[3] The level of production in 1926 was even higher, and this in spite of a mild reaction during the second quarter and a slowing down of industrial activity in the last three months of the year. This latter mentioned decline was not the beginning of a cyclical recession, as business conditions continued very favorable throughout the first quarter of 1927. At the close of the period being considered in this study, then, the United States was enjoying undoubted prosperity.

I. SUMMARY OF MAJOR BUSINESS MOVEMENTS

Summarizing the period from 1919 to 1926, it appears that, following the hesitancy which marked the

[2] *Review of Economic Statistics*, July, 1924, p. 183.
[3] February, 1926, p. 71.

first quarter of 1919, a recovery movement set in during April which progressed with extraordinary rapidity. By the third quarter a level of prosperity had been attained. This phase which lasted for three quarters, was followed by six months of receding activity, and by the beginning of the fourth quarter of 1920 a period of acute depression had set in. The weight of the evidence seems to be to the effect that the commencement of the subsequent revival was delayed until the opening quarter of 1922. It proceeded slowly, but by the end of the third quarter the United States had again achieved a position of moderate prosperity. During the early months of the following year trade and industry became very active, but the high levels of output and distribution were not long maintained. A decline set in during June, 1923, and business during the remainder of the year was characterized by mild but broadening recession. The falling movement was halted in the first quarter of 1924, but resumed in the succeeding quarter. An upward tendency manifested itself in July, and the last half of 1924 was a period of recovery. Throughout the following two years the United States enjoyed great prosperity.

II. RAILWAY EQUIPMENT ORDERS

1919. The railroads remained under the control of the United States Railroad Administration throughout the year 1919, and the volume of orders for equipment was exceedingly small. The Railroad Administration bought no cars during the year and only 50 locomotives. It arranged for the purchase of rails but not in large quantities. The railroads themselves placed practically

no orders with the builders, until the last quarter of the year, and then the amounts were inconsiderable.[4]

The statistics indicate that during 1918 the railroads had obtained 250,000 tons less than the average annual rail tonnage consumed during the three-year test period.[5] Nevertheless, no rails were purchased until nearly five months of the year had passed. The reasons for the delay are closely associated with the rise and fall of the Industrial Board of the Department of Commerce. This body, which was composed of six members appointed by Secretary Redfield, came into being the latter part of February, 1919.[6] It was said to have been created to meet an abnormal price situation, not with the purpose of " price-fixing," but of the " readjustment of prices " or of " price stabilization." The immediate aim was to provide a method by which the government could obtain needed materials at a fair price, the presumption being that these prices would then become the ruling prices in the market generally. With these ends in view the Industrial Board was expected to hold a

[4] The railway equipment builders, however, opened the year with large orders on their books. Only 546 locomotives of the 2,030 standard units ordered by the Railroad Administration had been shipped by November 30, 1918, and a month later more than 88,000 standard cars out of a total order of 100,000 were undelivered. *Railway Age,* January 1, 1919, pp. 68 and 86. These orders were not completed until the early part of 1920. Furthermore, equipment ordered prior to the inauguration of Federal control was being shipped as late as December, 1919. *ibid.,* December 26, 1919, p. 1266. The rolling mills had 1,000,000 tons of old rail orders on their books at the opening of the year. *Iron Trade Review,* June 5, 1919, p. 1495. Mention should also be made of the large orders placed by buyers other than the domestic railroads. Private car lines ordered nearly 15,000 tank cars, in addition to which 4,000 freight cars and 950 locomotives were sold abroad.

[5] *Iron Trade Review,* June 5, 1919, p. 1495.

[6] The brief description of its career given here is based on running accounts appearing in current issues of the *Iron Age,* the *Iron Trade Review,* and the *Railway Age.*

series of conferences with representatives of the industries produeing such basic materials as iron and steel, lumber, textiles, eement, eopper, and so on.

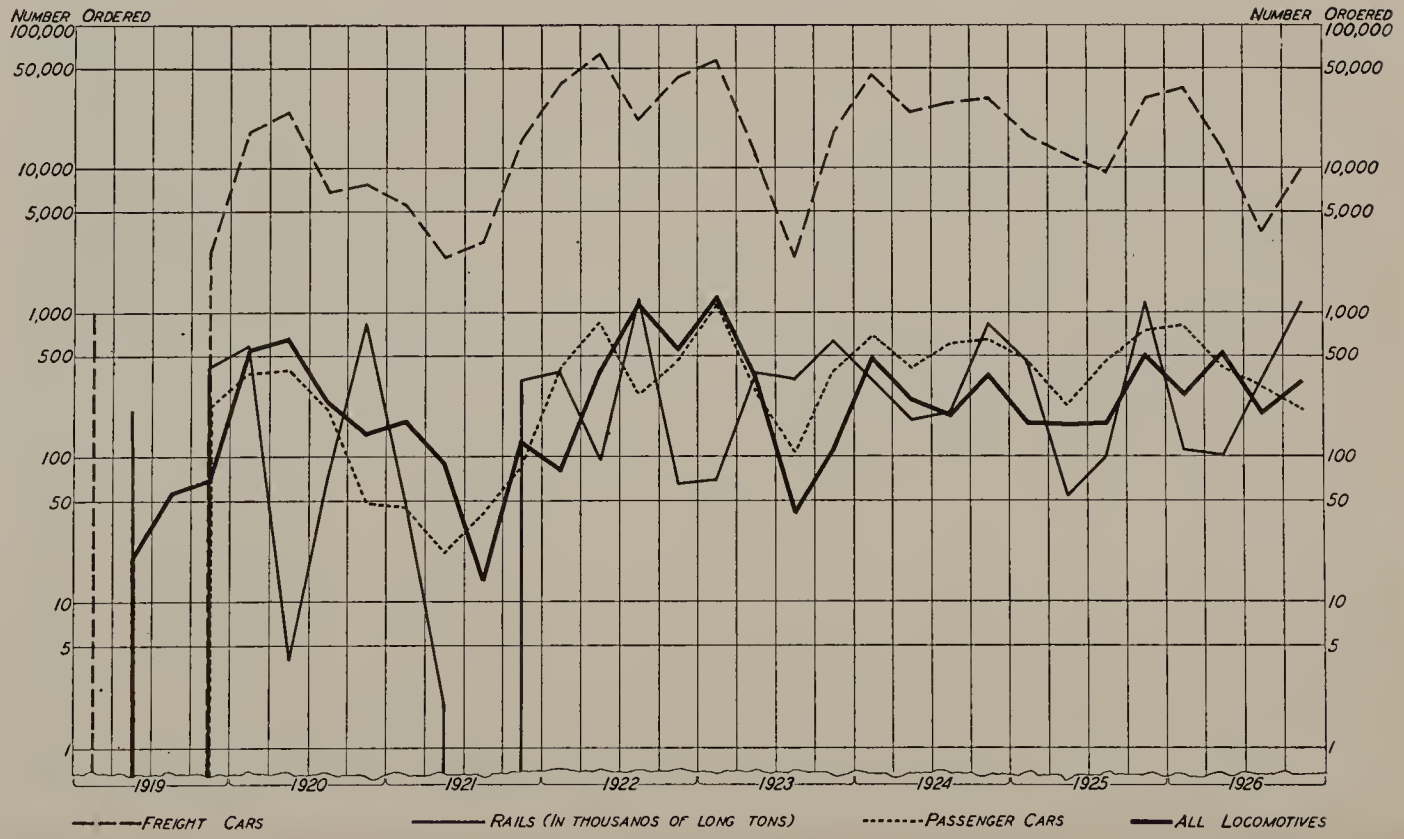
Contact was made first of all with the iron and steel industry. After one or two preliminary conferences in New York City, a formal meeting was held in Washington the latter part of Mareh, attended by leading manufacturers and the members of the Industrial Board. A series of prices for iron and steel produets was agreed upon, ineluding rails. Bessemer and open-hearth rails were to be sold to the government at $45 and $47 per ton, respectively.[7] Now it happened that the United States Railroad Administration was by far the largest buyer of iron and steel and its coöperation was necessary to the success of the stabilization scheme. But Director-General Hines refused to accept the prices agreed upon, insisting that they were too high. All attempts to bring about a meeting of minds at the prices speeified were of no avail. On May 9, 1919, Seeretary Redfield aceepted the resignations of the members of the Industrial Board, and its brief career came to a elose.[8] Along with it the government's attempt to "stabilize" priees ended.

On May 8, Director-General Hines annouueed that competitive bids would at once be requested on 200,000

[7] This was a reduction of $10 compared with 1918 quotations and brought the level back to the point where it had been when the United States entered the war. No orders were placed by the Railroad Administration during 1918 and the prices of $55 and $57 applied only to some comparatively small purchases by the Army and Navy Departments.

[8] "Saturday evening . . . . twenty-four hours after the resignations of the board members had been accepted by Secretary Redfield, Attorney-General Palmer made public the text of the opinion which he had sent to Mr. Redfield, April 1. . . . This left no doubt about Mr. Palmer's view that the board was illegal." *Iron Age,* May 15, 1919, p. 1299.

Railway Equipment Orders, by Quarters, 1919-1926



tons of steel rails. But when the bids were submitted they proved to be disappointing. All the companies, except one specified the prices which had previously been agreed upon by the Industrial Board and the representatives of the iron and steel industry. The one exception was a higher bid. On May 29, the Railroad Administration announced that it had placed orders for 200,000 tons of open-hearth rails at $47, but under protest. Delivery was called for in 60 days and more than 50 lines shared in the order.

At the time these orders were placed the rail manufacturers still had between 400,000 and 500,000 tons of old orders on their books. The Railroad Administration believed that enough tonnage was contracted for to take care of the carriers' requirements until October, and declined to commit itself regarding the possibilities of later purchases. The railroad owners themselves were hesitant about entering into any contracts for the future delivery of equipment until they knew more definitely about the arrangements under which private direction was to be restored—President Wilson had announced in May that the roads would be "handed back to their owners at the end of the calendar year." The resultant dullness in the markets for railroad supplies led the *Iron Age* to remark, on the last day of July: "The one steel consuming line that has not swung partly or fully back into the normal stride as to steel buying, is the railroads."

In August, however, some new life was instilled into the rail markets through an inquiry sent out by the Railroad Administration to each of the producing companies asking that prices be quoted on 100,000 tons of rails. The rail makers displayed no great enthusiasm in replying to the inquiry, apparently because they were busy

turning out other products which yielded higher profits than they could secure from the manufacture of rails. The steel strike initiated on September 22 was an additional complicating factor. Finally, in November, three months after bids had been called for, the Administration awarded a small order for 41,000 tons to the Bethlehem Steel Company at the price of $47. No more orders were placed by the Director-General during the remainder of the year.

The railroads themselves, during the last quarter of 1919, entered into negotiations for small lots of equipment. Many of the contracts were tentative and hinged on the return of the roads to private hands at the turn of the year. Prices in some cases were left to be fixed later. This arrangement meant that no rails could be rolled until the uncertainty relative to the return to private ownership was removed.

Rails that had been ordered by the Railroad Administration were practically all rolled by the end of the year. The steel mills entered 1920 with no more than 200,000 tons of definite rail orders on their books.[9]

1920. The roads were not handed over to their owners on January 1, 1920, but President Wilson issued an announcement during the first week of the new year

[9] A word should be said regarding the construction of new track during 1919. The statistics published by the Interstate Commerce Commission show that the number of miles of railway line operated by "reporting railways" increased by just 18 miles in that year, while total track increased by 1,549 miles. For "all railways" there was a decrease in miles operated or 526 miles. These figures are not a satisfactory measure of the amount of new line constructed as they are affected by changes in leases and by abandonments. Data compiled by the *Railway Age* show that 686 miles of main line track and 450 miles of other track were built in 1919. The statistics gathered by that periodical indicated that more line was abandoned than built, and it remarked: ". . . railway development in the United States came nearer to a dead standstill in 1919 than in any previous year since the first rail was laid in this country." January 2, 1920, p. 3.

that government control would end on March 1. This proved a great stimulus to railroads buying on their own account and it was estimated that almost immedi-

PRODUCTION AND CONSUMPTION OF RAILS, 1918–1926 [a]

(In thousands of gross tons)

Year	Production	Imports	Exports	Apparent Consumption
1918.....	2,541	9	454	2,096
1919.....	2,204	17	652	1,568
1920.....	2,604	46	595	2,055
1921.....	2,179	22	322	1,879
1922.....	2,172	27	277	1,921
1923.....	2,905	30	267	2,667
1924.....	2,433	43	208	2,268
1925.....	2,785	37	152	2,670
1926.....	3,218	55	188	3,085

[a] From *Statistical Abstract of the United States*, 1926, p. 713.

RAILROAD CONSTRUCTION, 1918–1926

(In thousands of miles)

Year	Line in Operation [a]	Increase	
		In Line [b]	In All Track [b]
1918.....	1,826 [c]	721	1,538
1919.....	526 [c]	686	1,136
1920.....	114	314	414
1921.....	1,277 [c]	475	642
1922.....	560 [c]	324	543
1923.....	498	427	1,176
1924.....	324 [c]	579	1,114
1925.....	287 [c]	644	1,354
1926.....	309 [c]	1,005	1,527

[a] From the Interstate Commerce Commission.
[b] From the *Railway Age*.
[c] Decreases.

ately 400,000 tons of tentative rail orders at Chicago were converted into contracts. The Illinois Steel Company began at once to roll 40,000 tons for the Rock Island. In order further to promote immediate rail deliveries the Railroad Administration agreed to accept

all the open-hearth rails that could be rolled and delivered before March 1 at a price of $47 per ton. The government had hoped under these conditions to secure 280,000 tons of rails. Instead it managed to place orders for only 44,000 tons with three companies.[10] The mills were engaged on more lucrative contracts.

But apparently the needs of the railroads were urgent. At any rate, the Railroad Administration took advantage of the fact that the country was still technically at war and prevailed upon the War Department, in the last day of January, to commandeer 73,500 tons of steel rails to be delivered by March 1.[11] This requisition was in addition to the orders already mentioned. It was asserted in the trade periodicals that this action on the part of the Railroad Administration in preëmpting space for rails forced the manufacturers to displace an equivalent amount of private business, presumably of a more profitable character.[12]

During the early part of 1920, the mills were more willing to accept orders from the carriers themselves than from the Railroad Administration, as they did not demand immediate delivery. While many of these formal contracts were nothing more than ratifications of tentative agreements entered into the previous year, much additional tonnage was placed by roads which had

[10] See *Iron Trade Review,* January 22, 1920, p. 295; and *Iron Age,* January 23, 1920, p. 297.

[11] Power to take this action was authorized by Section 120 of the National Defense Act of 1916. "This authorizes the commandeering of munitions or other materials and supplies needed for military purposes or other purposes connected with military needs, and its exercise at this time is on the theory that all of the troops have not yet been moved and that the railroads under Federal control are still being used for military purposes." *Railway Age,* January 30, 1920, p. 381.

[12] *Iron Trade Review,* January 29, 1920, p. 325.

not acted previously. As early as the first week in February the Illinois Steel Company announced that its rolling capacity was booked for the year,[13] and in April a similar statement was made regarding the United States Steel Corporation. Rail buying almost ceased by the end of the first quarter and was not resumed until late in the fall.

Good-sized orders were placed for rolling stock during the first four months of 1920. There was, however, a sharp decline in orders in May, and in the summer months they very nearly disappeared altogether. This disappearance of freight car orders was especially discouraging in view of the rapidly increasing car shortages.

On July 20, 1920, the United States Railroad Labor Board rendered a decision in which wage increases averaging 21 per cent were awarded to various classes of employees. Nine days later the Interstate Commerce Commission authorized general increases in freight and passenger rates. It was estimated that the decision of the Railroad Labor Board would add $600,000,000 to the annual payroll, whereas the revenues would be increased approximately $1,550,000,000 by the order of the Interstate Commerce Commission.[14] The *Railway Age* commented: "It seems to be universally agreed that the increase in freight rates and passenger fares is going to have a favorable effect on the car and locomotive market. Many of the business and financial writers profess to have observed signs that the expected after-the-war decline in business is already in our midst. But one and all . . . . express the opinion that the equipment market will probably be excepted from any

[13] *Iron Trade Review*, February 5, 1920, p. 403.
[14] *Railway Age*, July 23, 1920, p. 135, and August 6, 1920, p. 222.

decline that may manifest itself in industry in general." [15] The decline in the volume of railway equipment buying which began unmistakably in May persisted for the remainder of the year with no appreciable interruptions.[16]

The rail makers were more fortunate. Reservations for 1921 delivery were made as early as October, especially by the Western roads. On the 28th of that month the *Iron Trade Review* declared that the Chicago mills had practically disposed of their 1921 tonnage, and three weeks later the *Iron Age* stated that Eastern roads had very largely completed their bookings for 1921 requirements. In none of these transactions was a price named. Finally, towards the close of December the "independent mills" adopted the price of $47 for open-hearth rails for 1921 delivery. Announcement of this action was followed by the formal ratification of heavy orders, the highest estimate being approximately 2,500,000 tons, although the total of individual contracts noted in the press was much less.[17]

The orders for rolling stock during 1920 were especially disappointing because of the great expectations that had been aroused in the spring on the announcement of the approval by the Interstate Commerce Com-

[15] *ibid.*, August 13, 1920, p. 262.

[16] The peak of the car shortage appeared in November.

[17] The figures compiled by the *Railway Age* show the smallest amount of main line constructed for any year since 1893, the earliest date in its records. The *Railway Age* statistics indicate a total of 314 miles of main line constructed and 414 miles of "all track." The statistics on "miles operated" collected by the Interstate Commerce Commission give increases of 114 miles of first track for "all railways" and 2,687 miles of "all track" for "reporting railways." While the data published by the *Railway Age* are not presumed to be complete, those issued by the Commission are affected by abandonments and changes in the contractual relationship among the carriers.

mission of a $125,000,000 loan from the revolving fund, provided by the Transportation Act, for the purchase of freight cars and locomotives.[18] The *Iron Trade Review* estimated that the needs of the carriers were: 2,000 locomotives, 1,000 baggage cars, 3,000 passengers cars and 100,000 freight cars, and it seems to have been believed that orders approximating these amounts would be forthcoming shortly.[19] But the actual process of placing the loans with needy roads was a long one. The life of the loans as determined by the original act proved to be too short, and maturities were extended from five to fifteen years, by an amendment passed in June, 1920. The Association of Railway Executives, acting for the larger carriers, did not make its final report on the allocation of the funds until June 28. The mere routine of obtaining the funds from the Treasury Department, subsequent to the approval of particular loans, occasioned considerable delay. By early December, less than $29,000,000 of loans for the purchase of locomotives and freight cars had been approved, out of a total of $125,000,000 set aside for that purpose; and not all of that small portion had been placed in the treasuries of the borrowing carriers.[20] The bulk of the loans were made in the following year.

1921. During the first nine months of 1921 the volume of orders for cars and locomotives became exceed-

[18] Section 210 of the Transportation Act provided a loan fund of $300,000,000, but not all of it was set aside for equipment.

[19] May 27, 1920, p. 1554.

[20] *Railway Age,* January 7, 1921, pp. 62 and 95. It is not meant to be implied here that had more of this fund been immediately available the roads would have entered the market in vast numbers. The possible consequences will have to remain conjectural. In this connection mention should be made of the fact that prices of cars and locomotives reached their peak in 1920. Compare an article in the same issue of the *Railway Age,* p. 87, ff.

ingly small. This is best indicated by comparing the amount of equipment bought during the first three quarters of 1921 with the volume of purchases in the corresponding period of the depression years, 1894 and 1908. The figures are given in the table below.

The railroads were not buying freely at the close of 1920, but the new year had hardly opened when their activities became still more restricted. The passage of the Winslow-Townsend bill in February authorizing the payment of $350,000,000 due the railroads from the government aroused hopes among the builders that buy-

Equipment Purchases in 1894, 1908 and 1921 [a]

(First nine months only)

Year	Locomotives	Freight Cars	Passenger Cars
1894.....	204	15,451	159
1908.....	788	35,594	445
1921.....	277	11,140	108

[a] It should be remembered that the later data are much more complete than those for 1894.

ing would be renewed on a large scale, but these expectations were not realized. "By the end of the first quarter, the situation became so acute that the railroads had closed many of their shops and laid off thousands of men . . . By the middle of May . . . railroad stocks of all classes of material, steel included, were not more than one-half what they had been at the beginning of the year." [21]

A feature of railroad equipment markets which received much attention in the trade press during the early summer and the following months of 1921 was the amount of repair work being carried out and newly

[21] *ibid.*

contracted for in the car building shops. In its issue of June 9 the *Iron Trade Review* stated that ". . . miscellaneous buying by the railroads actually is on the increase," [22] and two weeks later it said that ". . . the most tangible evidence of better buying is coming from the railroads, particularly for equipment repairs." [23]

The absence of interest, on the part of the railroads, in new freight car equipment is partially accounted for by the fact that the net shortage of 146,000 cars at the end of August, 1920, had become a net surplus of 246,000 cars a year later. On the other hand, the extent to which repairs had been postponed is suggested by the increase of " bad order " cars from 166,000 to 374,000 during the same period.[24]

There was a distinct improvement in the business of the locomotive and car builders during the last quarter of 1921. All types of rolling stock were purchased in larger volume than at any time since the spring of 1920. The orders were not great, absolutely, but it was plainly evident that a marked change for the better had occurred.[25]

[22] p. 1559.

[23] p. 1691. See also 1921 issues of June 30, p. 1759; July 7, p. 1; August 8, p. 295; September 9, p. 647; and October 10, p. 94.

[24] *Survey of Current Business,* May, 1922, p. 107. The number of bad order cars showed a slight reduction on September 1 for the first time in twelve months. The *Railway Age* said: "The year (1921) opened with bad order freight cars amounting to over eight per cent of the total. This was the greatest percentage ever recorded with the sole exception of the autumn of 1919 when it was over nine per cent. But these figures seem reasonable when compared with the record established during 1921, which was 16.6 per cent on August 15. . . ." January 7, 1922, p. 59.

[25] During the first week of November the President of the Chicago, Burlington, and Quincy announced that its directors had authorized the expenditure of $15,000,000 for new equipment. It was understood that "immediate arrangement" was to be made for the purchase of 7,300 freight cars, 55 locomotives, and 127 passenger cars, and the announcement was hailed as "the most en-

It will be recalled that a relatively large volume of rail orders was booked during the last quarter of 1920 for 1921 delivery. During the first quarter of 1921 the rolling mills were busily engaged turning out products to meet these orders. This activity seemed to attain its height in the West. "In March the Gary mill made a world's record of 92,600 tons rolled, and in April nearly equalled that figure with 88,000 tons." [26]

But even while production was at its peak, financial difficulties became apparent. As early as March 24 the *Iron Age* stated that "failure of the railroads to make even partial payments against shipments already made seems to be discouraging active execution of the bookings which the several makers took some time ago," and six weeks later, on May 19, it noted that: "The railroads are even less disposed than they were earlier in the year to receive deliveries on orders placed with steel mills." In May the roads began "to suspend shipments against their contracts," and releases dropped off sharply, with consequent adverse effects on mill operations. It began to appear also that much of the rail tonnage which had been delivered had not been laid. In the issue just quoted the *Iron Age* stated that five of the strongest Western lines had not laid a rail since the first of the year despite the fact that a portion of their 1921 rails had been received. One road had placed 60,000 tons in storage. The roads were said to be postponing activity until wages were reduced.

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couraging thing" that had occurred in the railway equipment field for a long time. *Railway Age,* November 12, 1921, p. 916. But this road placed no orders for locomotives or cars in the last quarter of 1921.

[26] *Iron Age,* January 5, 1922, p. 83.

The reduction of wages which occurred in July, however, was not reflected in increased activity among the rolling mills. The railroads simply refrained from filing specifications against their orders. On September 8, 1921, the *Iron Age* said that nearly 2,000,000 tons of undelivered orders were still on the books of the rail makers.[27] The explanation offered was high prices. That this explanation was partially correct was demonstrated a few weeks later, when Judge E. H. Gary announced a reduction in the price of standard rails from $47 to $40, this cut applying alike to new orders and to tonnage due on unfilled orders. Within a week requisitions for 100,000 tons of rails were released.[28]

Some booking of new orders for 1922 delivery followed the price adjustment, but the business was in very moderate volume. The New York Central, Norfolk and Western, and Southern Pacific were the only roads to place orders of any considerable size, and the last quarter of the year saw less than 350,000 tons placed on the books. No doubt the large amount of 1921 tonnage still undelivered in December was a prime cause for the quietness in the rail markets. For example, the *Iron Trade Review* recorded on December 22 that the Rock Island had 13,000 tons coming on its 1921 contract,[29] and the next week it said that specifications against existing contracts were not being supplied " with much freedom " and that a good deal of production was being stocked.[30] Even the large roads were moving very cautiously. The Pennsylvania had considered plac-

[27] p. 618.
[28] *Railway Age,* November 5, 1921, p. 860.
[29] p. 1628.
[30] p. 1686.

ing 130,000 tons for 1922 delivery, but by the end of December this tentative amount had been reduced to 100,000 tons.

The extreme dullness in the rail trade was reflected in the field of railway building. The Interstate Commerce Commission's compilations show a decrease in operated main line of 1,277 miles, while the *Railway Age* figures show the smallest total for any year except 1920.

Surveying the year as a whole, the *Railway Age* said: "There have been bad years in the history of the railways of the United States before. In most respects 1921 was much the worst of all." [21] The annual data on orders given in the table on page 229 afford ample testimony as to the truth of these statements as far as purchasing activity was concerned. Nevertheless it remains true that there was an unmistakable recovery during the fourth quarter in the volume of car and locomotive sales. Rail buying received some impetus, likewise.

1922. The first five months of 1922 were characterized by large purchase of locomotives and cars by the railroads. The revival of buying which had begun in the last quarter of the previous year continued with increased vigor.

The *Railway Age* said, on January 14: "Business is looking up in the supply field," and noted a number of important transactions occurring in the first two weeks of the new year. During the first week in February, W. B. Storey, President of the Santa Fe, announced that his road would spend $43,500,000 for improvements and betterments during the year, and in

[21] January 7, 1922, p. 1.

the same month the long awaited Burlington orders were placed. Orders for cars continued to be placed in large volume throughout the spring. On April 15 the *Railway Age* said: "The railroads are preparing for the country's expected prosperity and the resulting increased business. They are ordering freight and passenger cars in unusual volume, and the announcement of authorizations for these expenditures of millions for additions and improvements by the various roads are tripping so closely on one another's heels that it is becoming difficult to realize how much there is to be done. . . ."

Large rail bookings were also made during the first four or five months of 1922. "Ordinarily heavy rail orders are placed in the fall and winter preceding the year in which rolling is desired, but on January 1, 1922, hardly 400,000 tons were on the books of the mills. Additional orders for 1922 delivery amounting to approximately 500,000 tons came in largely in the first four months of the year, and with the exception of an insignificant tonnage were entirely booked by July 1." [32]

Orders for cars, both passenger and freight, eased off during the summer. The decline was only temporary, however, and large purchases were made during the last four months of the year.[33] Freight car purchasing was

[32] *Iron Age*, January 4, 1923, p. 96. Comment in the iron trade journals indicated that specifications against orders for 1922 delivery were filed in only fair amounts during the first half of the year. The rail mill at Gary was idle practically all of January, although by late spring it was producing at maximum capacity. For the year as a whole slightly less tonnage of rails was rolled in 1922 than in the year before.

[33] The *Iron Age* said: "It is interesting that at the same time orders for new cars dropped off, the letting of repair work increased." Fully two-thirds of the cars let for repairs during the year were contracted for during the period from June to September. *ibid.*

undoubtedly stimulated by the extraordinary pressure for cars in October. "The railroads found great difficulty in handling their October, 1922, business. The measure of this difficulty was indicated in a car shortage which for the period from October 23 to 30 averaged 179,239 cars, a record never before equalled in American railroad history."[34] In contrast to the decline in the volume of freight and passenger car orders during the third quarter of 1922, locomotive buying reached its peak at that time, and then fell off somewhat in the last quarter of the year.

A great spurt in rail buying took place in September, 1922.[35] It was occasioned by the announcement, on the 13th, that the price of standard rails was to be advanced from $40 to $43 per ton on October 1. The orders were for 1923 delivery and absorbed the rolling mills' capacities for a large portion of that year. New business for these mills was naturally almost wholly lacking during the remainder of 1922.

Railroad buying did not break records in 1922, but it was much heavier than for several years. The revival which had commenced in the last quarter of the previous year grew in vigor as 1922 progressed. Contemporary writers spoke of it as a time of transition, carrying business over from the lean period of 1914 to 1921 to years of great prosperity that were to follow immediately.

1923. The railroads continued to buy freely during the first quarter of 1923. Locomotives and freight cars

[34] *Railway Age,* January 6, 1923, p. 15.

[35] The *Iron Trade Review* described it as a movement which for magnitude had never been equalled in the steel industry. October 5, 1922.

were purchased in large numbers and passenger cars in extraordinarily large numbers. Our data indicate that, with one exception, more passenger cars were ordered in the first three months of 1923 than during any equal length of time in history.[36] Very few new rail orders were placed, of course, as the roads had made reservations covering a large portion of their 1923 requirements the previous September. But the rolling mills were exceedingly busy. The *Iron Age* reported, on February 8: "The mills are hard pressed to make the rail deliveries desired by the railroads. Specifications are being received against fully 90 per cent of the tonnage contracted for last fall." Furthermore, the air was full of great plans designed to extend over the entire year. In its first issue for 1923 the *Railway Age* noted: "Twenty-seven railways with an aggregate mileage of approximately 95,000 miles will spend over $350,000,000 for improvements to roadway and structures and for new equipment in 1923. . . . Large as this figure is, it includes only those expenditures which have been definitely approved." [37]

But railroad buying of rolling stock ran into a slump in April, 1923, and this grew more pronounced as the summer months wore away. In an editorial entitled, "Not Due to Buyers' Strike," the *Railway Age* accounted for the decline by pointing to the large amount of equipment on order and undelivered. "The heavy buying of cars and locomotives which has been under way for several months seems to be entering a status of lessened activity. . . . The reason that the orders were not heavier in April is unquestionably due

[36] The second quarter of 1909 set the record.
[37] January 6, 1923, p. 15.

to the large volume of equipment for which the railroads are awaiting delivery. A condition of this kind is hardly evidence that there is any buyers' strike in the railway equipment market." [38] In a subsequent article, surveying 1923 as a whole, it said that "the reason orders fell off after April was the substantial increase in locomotive prices." [39]

The rail markets did not experience the sharp recession noted above in the rolling stock markets. There was no outstanding month, comparable to September, 1922, but fully as much tonnage was ordered by the railroads during the last nine months of 1923 as during the same period of 1922. The rolling mills were well engaged throughout the year and at its close found their books reasonably supplied with 1924 business.

During the last quarter of 1923 there was an appreciable increase in the volume of orders for rolling stock, this being most marked in the case of passenger cars. The improvement had the appearance of the initiation of another revival movement.

In summary, the volume of sales of freight cars and locomotives during the twelve months of 1923 failed by a considerable margin to equal the record made in 1922. Passenger car and rail buying did not decline so drastically. The recessive movement commenced in April and affected all types of rolling stock.[40] Rail orders continued to be placed in moderate volume throughout the year.

1924. The promising signs of a revival of railroad buying with respect to cars and locomotives, which put

[38] May 19, 1923, p. 1192.
[39] January 5, 1924, p. 78.
[40] Passenger car orders for the year were comparatively large but were concentrated in the first three months.

in their appearance during the last quarter of 1923, were well confirmed in the volume of new business entered on the books of the builders during the first four months of 1924. The trade comments reflect the optimism that prevailed within the equipment industries. The *Railway Age,* early in January, remarked: "The freight car market at the present time evidences decidedly optimistic tendencies which speak well for a large volume of orders and production alike for 1924." [41] In April it was said that: "The railway supply field so far this year has been inclined to lead the rest of industry somewhat, due to the large orders for freight cars." [42]

Beginning with May, however, there was a collapse in the purchase of all types of railway equipment. Orders fell from a total of 280 passenger cars in April to 100 in May; from 24,182 freight cars in April to 230 in May; and from 244 locomotives in April to 2 in May. This "almost absolute cessation of buying" of freight cars and locomotives prevailed all through the summer. The volume of passenger car orders was better maintained. Not until September were freight cars ordered in any volume, and even then two roads, the Illinois Central and the Pennsylvania, ordering 10,000 cars each, were largely responsible for the new business. Orders for both types of cars were fairly large during the remainder of the year. Locomotives

[41] January 5, 1924, p. 83.

[42] April 5, 1924, p. 871. It will be noted that particular attention was given to the freight car situation. New business in that field was undoubtedly larger than in either of the others, yet an examination of the statistics of orders for locomotives and passenger cars will show that the volume of trade was being well maintained there also.

were purchased with more freedom in the final quarter of the year, but the aggregate of orders was far from impressive.

A somewhat larger tonnage of rail orders was booked in 1924 than in 1923, but the output was slightly less. The later months of the year saw large orders placed for 1925 delivery. The *Iron Age* stated that the year came to a close with the books of steel mills in an improved condition.[43]

The year 1924 cannot be viewed as a period of depression in the railway equipment field. The locomotive manufacturers were the only ones who booked less business than they had done in 1923. Freight cars, passenger cars, and rails were all purchased in substantially larger amounts in 1924 than during the previous year, and the volume of orders placed in those industries compares favorably with the figures of 1922. Except in rails, however, the showing was due to very heavy purchases in the first four months. Summer buying was of almost unprecedented lightness, and fall business was only fair.

1925. Very few locomotives or freight cars were bought by the railroads during the first nine months of 1925. During that time locomotive orders averaged only 56 per month. In both 1923 and 1924, the first part of the year had shown an improving situation. This was not so in 1925, nor was there any quickening of activity in the spring or summer in either the locomotive or the freight car market. In the passenger car field, the slump in orders during the first six months of the year was less severe than in the case of locomo-

[43] December 25, 1924, p. 1692.

tives and freight cars, and there was a decided increase in the third quarter.[44] The final four months of the year, however, saw decidedly better business develop for the builders of all types of rolling stock.

Rail orders repeated their performance of immediately preceding years: a very large volume in the final quarter, a much smaller volume in the first quarter, and almost none during the middle six months. In 1925 the variation was even more extreme than usual, with a very large volume of orders booked in the fall for 1926. The year's total of rail orders exceeded those of 1923 and 1924, and was only slightly less than that of 1922.[45]

During 1925, locomotives and freight cars were purchased in comparatively limited amounts. Passenger cars and rails were ordered more freely. But the year as a whole was one of decidedly moderate business for the railway equipment manufacturers. In its final months a revival of buying activity set in.

1926. Rolling stock was ordered in much larger volume during the first part of 1926 than during the early part of 1925. The buying movement was not long maintained, however. Freight car sales began to diminish even before the close of the first quarter, and by the end of June new business was very scarce in all the major types of equipment. As early as April car builders in

[44] The tendency for passenger car orders to hold up better than those for freight cars and locomotives during 1925, and during other nearby years, was currently explained on two grounds. The carriers were putting forth special efforts to maintain and stimulate long distance travel, and this type of rolling stock had been most neglected in war and post-war purchasing. *Railway Age,* January 2, 1926, p. 74; January 1, 1927, p. 111.

[45] An interesting and much discussed episode in the rail trade during 1925 was the purchase of 10,500 tons of steel rails from manufacturers in Belgium by the Detroit, Toledo and Ironton, the railroad owned by Henry Ford. The purchase was made in January. *Iron Age,* January 11, 1925, p. 91.

certain sections of the country began " to express disappointment over the small volume of railroad equipment buying," [46] and in May it was reported from the Pittsburg district that local car manufacturers were beginning to approach the end of their orders and to lay off men.[47] Locomotive orders held up somewhat better than during the previous year, but business was very meagre during the summer and early fall. In August, car companies in the Chicago district were reported to be reducing operations. The makers of passenger cars seemed to be in the best position, the *Iron Trade Review* stating, in July, that practically all of these concerns had orders booked in sufficient amount to keep them busy up to the first of the year, while manufacturers of freight cars in many instances would complete their orders by September 1.[48]

Business picked up slightly in the final quarter, but much less than in the year before. The average daily surplus of freight cars was somewhat reduced during the last three months of 1926 from the figures for 1925. But even during 1926 the busiest portion of the year saw a net surplus of nearly 134,000 freight cars. That situation was not conducive to the placing of heavy orders for new equipment.

For the year as a whole orders for freight and passenger cars totaled less than the moderate aggregates of 1925. The volume of orders for locomotives showed a slight gain, but this did not prevent the year's record from being relatively low.

Most of the rails rolled during 1926 had been booked in 1925, so there was little new business developing until

[46] *Iron Age,* April 29, 1926, p. 1226.
[47] *ibid,* May 27, 1926, p. 1567.
[48] July 8, 1926, p. 104.

the railroads began to place their tonnages for 1927. Chief interest, as in previous years, lay in the volume of specifications filed from time to time. During the first three months, mills everywhere appeared to be receiving releases in sufficient amounts to maintain satisfactory operations. Beginning with April the reports from the Pittsburg district were less favorable, and in the following month both the volume of orders on the books and the volume of new orders being booked had become very small. The *Iron Age* said, referring to the Pittsburg section: "Little business in standard rails is coming out in this district, and the local producing unit has reduced its backlog to the vanishing point."[49] The Western rolling mills were more favorably situated and as late as the first week in July it was said: "Rarely have Western mills been so pressed by the railroads to make deliveries against rail and track fastening contracts. In practically every case railroads are taking out their entire obligations."[50] In October current output was again increased and rolling mill capacities were well engaged for the remainder of the year. This increase in activity was largely due to heavy bookings in October and November for 1927 delivery. The total of these orders was appreciably larger than during those of the year before. Viewing the year as a whole a slightly smaller tonnage of rails was ordered but more rails were produced than during 1925. The number of miles of track constructed was also somewhat larger. The *Railway Age* declared it was the first time in ten years that more main line track was constructed than abandoned.[51]

[49] May 27, 1926, p. 1568.
[50] *Iron Trade Review*, July 1, 1926, p. 34.
[51] January 1, 1927, p. 67.

The volume of orders placed in 1926 for railway rolling stock was considerably less than had been hoped for and anticipated. Standard steel rails were not purchased in large volume either, but expectations in that field seemed to have been more moderate. In comparison with former periods the volume of railroad purchases of cars and locomotives, in terms of number of units bought, was relatively small. The same thing was true of the tonnage of rails booked. The following table will indicate this:

Railway Equipment Ordered in Specified Years

Year	Locomotives	Freight Cars	Passenger Cars	Rails (Thousands of tons)
1901.....	3,537	184,659	2,110	1,785
1905.....	5,574	321,918	2,876	3,414
1912.....	3,409	175,674	2,086	2,608
1926.....	1,321	63,527	1,767	1,740

It is apparent that the greatest shrinkage in orders was in locomotives and freight cars. When it is remembered that the railroads purchased equipment about as freely in 1926 as during any of the three preceding years it becomes rather clear, however, that the railway equipment business was not experiencing a cyclical recession, but rather that the railroads had reduced their requirements to a permanently lower level.

III. SUMMARY OF CHANGES IN RAILROAD BUYING

In reviewing briefly the fluctuations in the order curves of railroad equipment buying for the years from 1919 to 1926 it may be noted first that as long as the carriers remained under the direction of the United States Railroad Administration the volume of orders

that was placed was governed by circumstances which to some extent were novel. The variations in the amount of new business entered on the books of the equipment builders during this period cannot be considered indicative of the railroad's purchasing policy. This remains true in spite of the attempt of the Railroad Administration to conduct its purchasing operations in as close conformity as possible with former railroad practice. As was noted earlier, no locomotives or cars of any description were ordered for the carriers in 1919. A total of 241,000 tons of rails was purchased in two transactions and these were distributed among a large number of roads.

In the last month of 1919, however, the roads began to place tentative contracts for rails and rolling stock, especially for rails, and during the first quarter of the new year the volume of orders attained fairly large proportions. The buying of rails practically ceased by the end of the first quarter. The volume of orders for cars and locomotives fell off sharply in May and dwindled further to very low figures in the ensuing months. An extremely large tonnage of rails was purchased in the last quarter of 1920 but there was no revival in the rolling stock markets. During the first nine months of 1921 railroad orders were scanty almost to the point of complete disappearance, but during the last quarter there was an unmistakable recovery of business for the car and locomotive builders. Rails were also purchased in fair volume at that time, and large additional orders for rails were placed during the first three months of 1922. Aside from a temporary decline during the summer months of 1922, occurring in different months for different types of equipment, the volume of railroad buy-

ing was well sustained until April, 1923. Then came a marked decline in orders for rolling stock but not for rails. A decided improvement in new business for the car and locomotive builders occurred in the last quarter of 1923, and orders continued to be placed in relatively large volume until May, 1924, when an abrupt drop occurred. The railroads did not remain out of the markets long, however. Passenger cars were again being purchased in fair amount in July, while freight car sales picked up somewhat in August and September. Orders for freight cars and locomotives were small during the first seven months of 1925, but recovered later. Passenger sales held up fairly well throughout the year. Rail orders as usual were concentrated in the third quarter and the year's total compared very favorably with previous periods. In 1926 approximately the same tonnage of rails was purchased as in 1925. Locomotives were bought in larger amount, while fewer passenger and freight cars were ordered. Less equipment was purchased during the second half of the year than during the first half, yet the last quarter of the year saw an upward tendency in the locomotive and freight car markets.

This summary is perhaps somewhat disappointing in that it does not disclose any long continued, clearly defined buying movements on the part of the railroads for the period under review. The diversity of movement of the order curves of the different types of equipment and the great frequency with which they change direction makes it very difficult to distinguish any general trends. With regard to locomotives and cars this broad statement may be hazarded, that since 1921 there have been no waves of railroad buying activity of suffi-

cient breadth and amplitude to be deserving of the name cyclical, but there has been a long gradual decline from the high levels of 1922 in the volume of orders placed from year to year.[52] The significance of this trend is minimized, however, by the sustained activity in rail buying.

Finally, variations in the volume of railroad purchasing from 1919 to 1926 may be compared with changes in general business conditions. No rolling stock was ordered during 1919. The orders for rails booked late in May were placed about two months after trade and industry began their rapid rise to a level of prosperity. The recession of the spring of 1920 was antedated by a sharp curtailment of rail orders in February and March. It was not preceded by a decline in the volume of purchases of rolling stock, however, which seemed to lag somewhat behind the decline in business activity generally. A large tonnage of rails was negotiated in the last quarter of 1920 while business as a whole was in a state of acute depression. Railway buying of all of the major types of equipment revived unmistakably during the last quarter of 1921,[53] with the recovery of business activity generally being delayed until 1922. The subsequent phase of prosperity began in the last quarter of 1922 and reached its zenith in May, 1923. Railroad buying was well maintained until April, 1923, when orders for cars and locomotives but not rails experienced a sharp decline. The large volume of orders for all types of equipment placed by the rail-

[52] But the falling off in purchases of all types of rolling stock during the middle two quarters of 1923 provides grounds for making an exception even to this statement.

[53] It will be recalled that the railroads had been good buyers of repair supplies all through the summer and fall of 1921. See pages 174-175.

roads during the last quarter of 1923 and especially during the first four months of 1924 is of particular interest, as the trend here was so much in contrast with the tendency of general business activity.[54] Buying in the railroad equipment field experienced a very brief but very sharp reaction during the months from May to July, 1924, and then staged a rally during the late summer and fall, corresponding to the upward movement of trade and business activity generally. The small declines in the volume of railroad purchases of rolling stock during the first half of 1925 and during the third quarter of 1926 are accompanied or immediately followed by slight dips in most of the indexes of general business activity. On neither occasion was there any interruption of the high prosperity which prevailed in most sections of the country.

IV. CONCLUSION

During the period from 1919 to 1926 there was some tendency for changes in the direction of movement of the order curves of railroad equipment buying to precede similar changes in the trend of trade and industry as a whole, but in comparison with former years railroad buying and general business activity displayed less evidence of interdependence.

[54] It is true, however, that the general business recession came to a pause in the first two months of 1924.

CHAPTER XIII

FLUCTUATIONS IN RAILROAD BUYING AND IN BUSINESS ACTIVITY

We are now ready to summarize our findings. Let us consider first the relationship between the time of occurrence of major changes in general business activity and of large variations in the volume of equipment orders placed by the railroads.

I. TIME RELATIONSHIP OF CHANGES IN BUSINESS AND IN RAILROAD BUYING

The table on page 195 indicates, in brief form, the amount of difference in the time of occurrence of each major recession and major recovery of business activity and in the time of occurrence of a similar change in the volume of orders for each of the four major types of equipment placed by the railroads.[1] This table shows at a glance that outstanding changes in the volume of railroad purchasing have tended on the whole to precede the upswings and downswings of business as a whole. This was especially true of periods of recession. In those instances of declining or of reviving business activity in which similar movements in the flow of railroad orders did not precede, the curve of railroad buying usually turned at the same time as the curve of general business activity. In only rare instances do the data show that variations in the volume of railway equipment

[1] The table in Appendix C, on pages 289-290, gives the month or quarter, and the year in which the beginning of each movement of business activity and of railroad buying activity is considered to have appeared.

orders lagged behind the major swings of commercial and industrial activity.

Aside from this obvious conclusion, the table suggests one or two other interesting relationships. It shows that in recent years railroad buying activity has shown a decreasing tendency to anticipate major improvements in commercial and industrial activity. Let us consider first the revivals.

Each of the five recovery movements which took place between 1870 and 1900 was preceded by a revival of railroad buying; of the six major upswings that have occurred since 1900, omitting the one that developed during the period of Federal control of the railroads, there were ony three in which a revival of railroad buying appeared earlier than the recovery of business as a whole. In no case during the first thirty years reviewed did a revival of railroad purchasing lag behind the corresponding changes in business activity. In two business recoveries which occurred after the turn of the century, namely, those of 1904 and 1908, the railroads failed to reënter the markets in the purchase of certain types of equipment, until commerce and industry as a whole were well on the way towards prosperity. And not only was there an increase in the frequency of instances in which increased railroad buying failed to anticipate business revivals, during the last half of the period investigated, but there was also a marked shortening of the interval between the two types of movement. In no recovery movement, after that of 1897, did a renewal of railroad buying precede a renewal of general business activity by more that one quarter, with the one exception of the upswing in 1924. During the previous years investigated there was only one recovery movement in

which the railroads did not reënter the markets at least two quarters ahead of most other industries.

TIME RELATIONSHIP BETWEEN LIKE CHANGES IN BUSINESS ACTIVITY AND IN RAILROAD BUYING, 1870–1926

(Number of quarters by which changes in railway buying preceded changes in business)[a]

Change in Business	Rails	Locomotives	Freight Cars	Passenger Cars
1871 Recovery.....	8	6	5	5
1873 Recession....	4	2	1	1
1879 Recovery.....	3	2	5	5
1882 Recession....	3	1	1	0
1885 Recovery.....	1	1	1	1
1890 Recession....	5	1	2	1
1891 Recovery.....	2	0	0	2
1893 Recession....	0	0	0	0
1897 Recovery.....	2	2	0	0
1903 Recession....	3	3	1	3
1904 Recovery.....	—1	0	0	0
1907 Recession....	0	2	2	2
1908 Recovery.....	—1	—3	0	0
1910 Recession....	1	—1	0	0
1912 Recovery.....	1	0	1	0
1913 Recession....	2	0	1	0
1915 Recovery.....	0	0	0	0
1918 Recession....	Government Control			
1919 Recovery.....	"	"		
1920 Recession....	1	0	0	0
1922 Recovery.....	1	1	1	1
1923 Recession....	[b]	1	1	1
1924 Recovery.....	[b]	3	3	3

[a] Zero indicates a simultaneous increase or decrease in business activity and in the purchase of equipment. Negative items indicate the number of quarters by which railroad purchases lagged behind business activity.

[b] Sustained buying of rails throughout.

Turning to the relationship that has existed in periods of recession, we find that during the earlier years there is a pronounced tendency for the equipment order

curves to turn downward ahead of the curve of commercial and industrial activity. This relationship held for every recession from 1870 to 1910, with the one exception of the decline of 1893, where the curves move approximately together. It is worthy of notice, also, that the interval between the changes in direction of the two curves is considerable in every case. After 1907, however, there is decided irregularity at periods of recession in the relationships existing between the curves representing orders for the different types of railroad equipment and the curve of general business activity. In most of the later recessions the railroads continued to place orders for one or more types of equipment so long as business activity as a whole was well maintained. There was little uniformity in the type of equipment which was thus purchased right up to the time of the beginning of the downswing.

The table on page 195 points to another fact of interest. Until about 1900, changes in the volume of rail buying tended to precede changes in the volume of orders for other types of equipment. No such general statement can be made of the years subsequent to that time. In several movements during the later years a revival or a decline in the volume of rail orders came after a similar change had occurred with respect to other types of equipment. The explanation may lie in the use of softer rails in earlier years, which compelled the railroads to replace them as a matter of necessity before purchasing any other type of equipment. Rolling stock could be patched up and much repair work was undertaken as the depression stages approached an end, but worn-out rails had to be taken up and new ones laid.

We turn now to the second principal question with which this inquiry is concerned, namely, the extent to which railroad purchasing has varied during different stages of the cycle.

II. EXTENT OF FLUCTUATION IN PURCHASING ACTIVITY OF THE RAILROADS

On page 198 there will be found a table which shows the cyclical fluctuations in the rate of purchasing of every type of equipment during the entire period covered by our investigation, and on page 199 a summary table shows the average rate of buying of equipment in recovery, prosperity, recession, and depression periods.[2]

As might have been expected, the tables show, generally speaking, that more equipment was bought by the railroads during periods of prosperity than during periods of depression, and more was bought during those months when business was improving than in those months when commercial and industrial activity was dwindling.[3]

It is apparent that for the period 1870 to 1926 as a whole, the volume of rail orders was least affected by

[2] In Appendix D, pp. 291-292, there will be found a supporting table which shows the date at which each phase of each cycle is considered to have begun and ended, and the number of units of each type of equipment ordered during each of these periods.

[3] It is surprising to notice that during the cycle of 1871-1879 orders for rails and for both passenger and freight cars were placed in greater volume, relatively, during the depression stage than during any other stage of the cycle, and freight cars were ordered at a more rapid rate during the period of depression than during the previous prosperity stage. In this connection, attention should be called again to the fact that order data for the first years of the period examined were extremely scanty (compare p. 22). Improvement in reporting may account in part for the heavy proportion of orders that seems to have characterized this depression era. If comparison is made with the recovery which follows, the rate in the depression does not seem high.

Monthly Rate of Buying of Railway Equipment in Each Phase of Business Cycles Indicated

I. Rails
(In thousands of long tons)

Cyclical Phase	May 1871-Mar. 1879	Apr. 1879-Sept. 1885-	Oct. 1885-July 1897	Aug. 1891-Aug. 1904	Aug. 1897-July 1897	Sept. 1904-July 1908	Aug. 1908-Dec. 1911	Jan. 1912-Aug. 1915	Sept. 1915-Mar. 1919	Apr. 1919-Dec. 1921	Jan. 1922-June 1924	July 1924-Dec. 1926
Recovery	11.1	71.2	131.4	63.0	62.9	148.8	115.3	216.3	277.0	34.2	196.3	171.8
Prosperity	11.5	91.4	74.4	44.7	150.5	255.2	191.7	180.7	87.0	167.0	34.6	146.3
Recession	2.5	67.8	18.5	30.2	30.8	37.7	34.0	47.5	0.0	12.5	155.6	....
Depression	25.4	60.4	45.4	47.5	55.9	44.3	126.8	95.8	[a]	81.5	59.0	....
Average for Cycle	20.8	76.2	82.1	47.1	119.4	191.9	131.1	120.6	96.8	75.9	125.9	....
II. Locomotives												
Recovery	51.1	90.2	119.1	132.2	92.4	432.0	135.5	280.7	192.8	12.7	178.6	93.7
Prosperity	67.2	137.2	136.1	167.2	257.0	391.8	304.4	299.3	194.0	105.0	258.9	97.0
Recession	12.5	80.4	110.5	66.8	134.2	264.7	319.0	134.8	0.0	148.5	73.8	....
Depression	29.2	45.8	101.7	55.7	126.3	68.0	158.0	87.6	[a]	36.3	82.7	....
Average for Cycle	38.7	97.3	128.3	84.9	208.4	325.1	195.9	164.9	175.8	64.8	155.5	....
III. Freight Cars												
Recovery	1,068.8	4,754.8	4,020.2	6,962.0	9,110.7	16,641.0	6,116.1	11,827.0	14,850.2	0.0	13,647.1	9,962.5
Prosperity	594.2	5,280.6	6,915.5	6,454.2	13,556.6	22,079.3	19,166.4	16,227.2	7,437.0	3,418.0	13,927.6	5,562.1
Recession	10.0	3,166.0	5,587.5	1,867.5	4,852.5	3,081.3	8,935.3	4,735.3	2,500.0	5,251.2	6,536.3	....
Depression	1,069.0	1,736.6	3,267.3	3,673.1	6,586.6	2,292.7	6,950.1	6,500.3	[a]	2,308.1	8,314.7	....
Average for Cycle	946.7	3,905.3	5,892.3	4,380.6	11,624.4	16,614.9	9,553.2	9,275.6	7,458.0	2,625.4	10,818.4	....
IV. Passenger Cars												
Recovery	14.8	36.1	87.1	240.2	77.6	337.8	248.0	221.3	171.8	2.5	169.9	209.0
Prosperity	20.4	105.7	101.8	246.1	150.5	216.0	322.3	203.8	65.0	95.0	226.4	153.4
Recession	1.5	81.0	24.5	69.0	155.8	50.3	92.3	153.5	0.0	102.3	128.6	....
Depression	31.9	39.6	117.1	35.9	102.4	41.8	152.6	91.3	[a]	16.1	135.7	....
Average for Cycle	27.4	76.9	97.9	95.7	132.8	182.4	211.0	139.3	68.7	44.3	167.8	....

The recovery of the spring of 1919 is considered to have followed directly on the recession of 1918–19 without an intervening period of depression.

cyclical movements. Locomotive orders, on the other hand, were very greatly affected by changes in business conditions, being in smallest volume, relatively, of all types of equipment in bad times and largest in good times.

This difference in the distribution of orders for rails and locomotives is not surprising. It is impossible to postpone the replacement of worn-out rails. Moreover rails can be bought in small lots, on a "hand-to-mouth"

AVERAGE RATE OF BUYING OF EACH CLASS OF EQUIPMENT, BY PHASES OF THE BUSINESS CYCLE, 1871–1926 [a]

Cyclical Phase	Rails		Locomotives		Freight Cars		Passenger Cars	
	In Thousands of Long Tons per Month	*As Percentage of Average*	Number per Month	*As Percentage of Average*	Number per Month	*As Percentage of Average*	Number per Month	*As Percentage of Average*
Recovery	117	*123.2*	136	*97.8*	7,803	*111.2*	139	*125.2*
Prosperity	124	*130.5*	204	*146.8*	10,165	*144.8*	147	*132.4*
Recession	63	*66.3*	114	*82.0*	4,379	*62.4*	97	*87.4*
Depression	56	*58.9*	63	*45.3*	3,328	*47.4*	57	*51.4*
Average	95	*100.0*	139	*100.0*	7,018	*100.0*	111	*100.0*

[a] The period from January, 1918, to February, 1920, inclusive, is omitted.

basis. On the other hand, locomotives can be repaired and there is considerable leeway in deciding whether to repair or replace a given unit. Motive power per unit is the most expensive type of equipment to buy, and it is no doubt to be expected that its purchase will be postponed so long as possible during periods of dull business.

The fluctuations in passenger car orders occupied a middle ground, being less affected by cyclical changes than were orders for locomotives, but considerably more affected than were rail orders. This finding of the statistical inquiry seems reasonable. Obsolescence rather

than actual wear and tear has been largely responsible for causing passenger cars to be scrapped, and during periods of depression it has been possible to keep old equipment in use beyond the point at which it would normally be discarded. The amount of discretion which can be used, however, is not as great as in the case of locomotives. Moreover, it is probable that in bad times the amount of locomotive mileage falls off more than the amount of passenger car mileage.

Freight car purchases varied in much the same way as did locomotive buying. This situation is more difficult to explain. *A priori* it might be anticipated that freight cars would be less affected by cyclical fluctuations in buying activity than passenger cars, because the retirement of freight cars is more a matter of wear and tear and less a matter of obsolescence. Presumably the explanation is found in the fact that freight car mileage fluctuates much more than passenger car mileage. Not only is the volume of freight traffic more variable than that of passenger traffic, but there is much more opportunity to conserve freight cars by holding back freight in bad times to make up full loads than is the case with passenger traffic. With great numbers of freight cars standing idle, the purchase of new cars can be curtailed very sharply for a limited period even though a considerable number of cars are being retired as worn out. In this connection it is worth noting that the record of freight car purchasing in recession periods was the worst of any of the four types of equipment which we have studied, while in recovery periods freight car purchasing has been much better than locomotive purchasing.

A priori reasoning might seem to suggest that the longer the period of recession-depression, the higher the rate at which orders for railway equipment would be placed. An examination of the data does not support this theory. In most cases the rate of buying was just as high during short periods as during extended periods of hard times.

The significance of the relative amounts ordered during each stage of the cycle must be weighed in the light of the conclusions stated in the first section of this chapter. Throughout the period examined we have found a tendency for changes in the volume of railroad buying to anticipate changes in the volume of general business activity. This tendency must have resulted in swelling slightly the order totals for depressions, and diminishing the totals for prosperity eras.

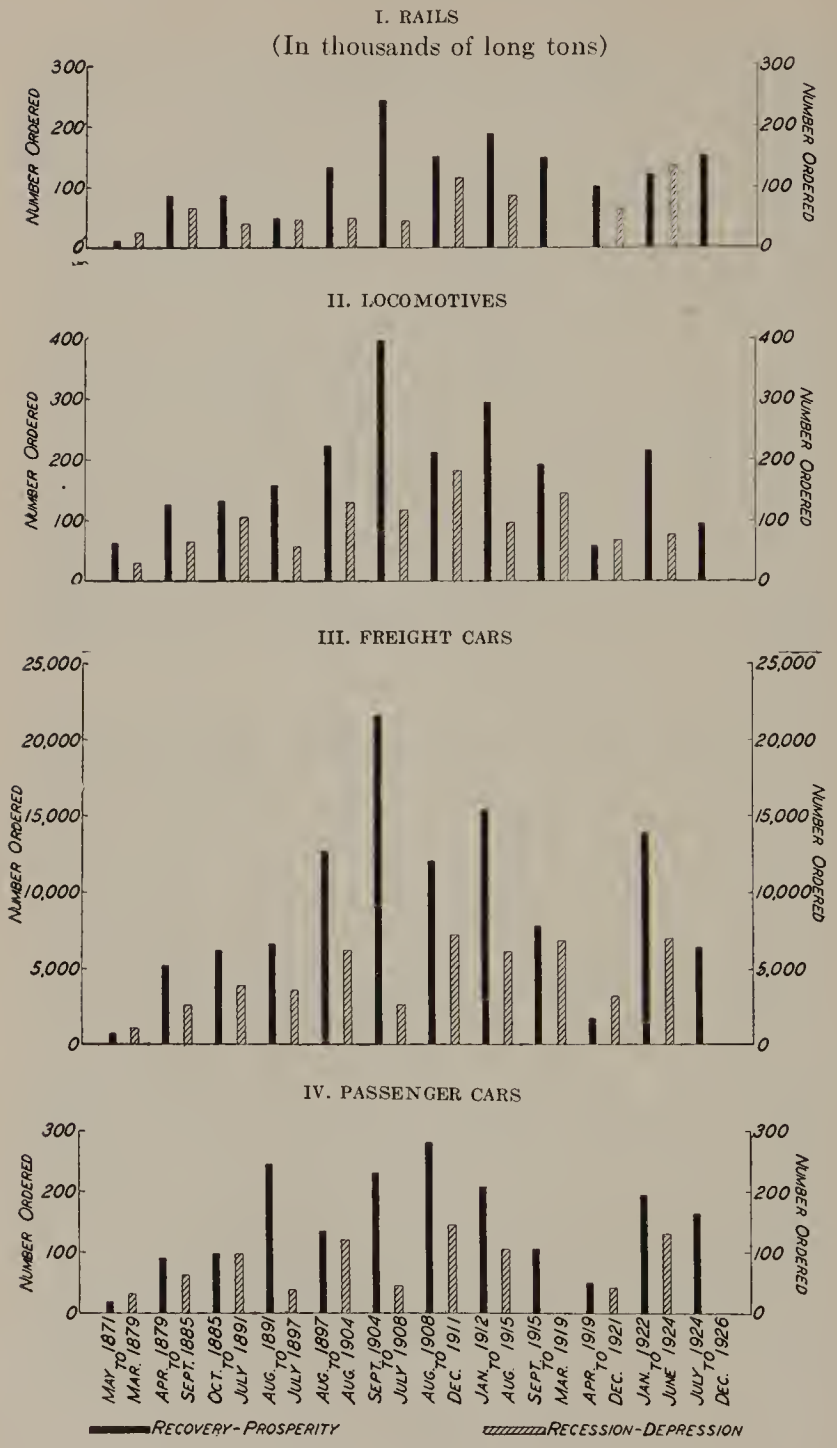
III. CHANGES IN RAILROAD BUYING PRACTICES

One question remains: Has there been any tendency in recent years for the railroads to alter their policies in the direction of buying more heavily in periods of low business activity? The chart on page 202 summarizes the findings on this point in graphic form.[4] In reading this chart it should be remembered that the recession-depression stage, 1920-1921, made up a part of a cycle during the earlier portion of which the railroads had been under Federal control, which had an undetermined influence on the proportionate amounts of equipment purchased during the later phases of the cycle.

It is difficult to discover any marked tendencies either toward or away from greater buying activity in periods

[4] The data are taken from the tables on pp. 198 and 291.

MONTHLY RATE OF BUYING OF RAILWAY EQUIPMENT IN EACH PHASE OF THE BUSINESS CYCLES INDICATED, 1871-1926

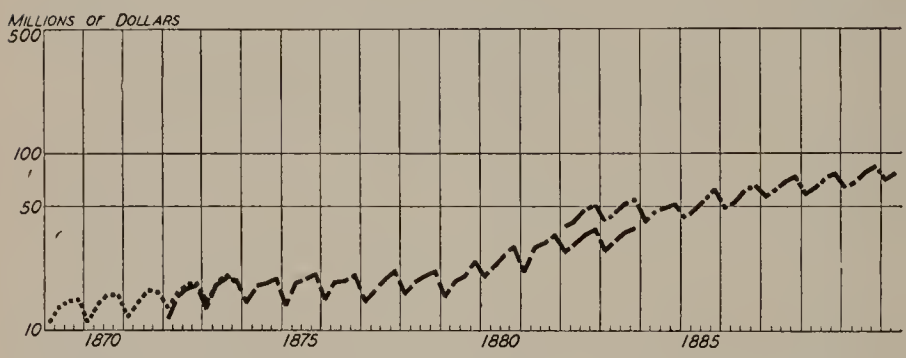


of relatively inactive business in recent years. Obviously there was an upward movement in all the curves following the low point reached in 1907-1908, but if a comparison be made with earlier years an upward trend is not clearly evident. Perhaps an exception should be made to this statement in the case of rail orders, but certainly orders for rolling stock were bunched in prosperous years during the more recent cycles as much as during the earlier ones.

CHAPTER XIV

RAILWAY PURCHASING AND RAILWAY GROSS EARNINGS

In the preceding chapters we have stated our conclusions concerning the time relationship between changes in buying activity of the railroads and the cyclical movements of business activity. There remains one other



question for consideration, namely, the relationship between the volume of the railroads' purchases and the activity of their own business. Does the evidence indicate that railroad buying has tended to rise and fall with the expansion and contraction of the volume of business which they themselves are doing?

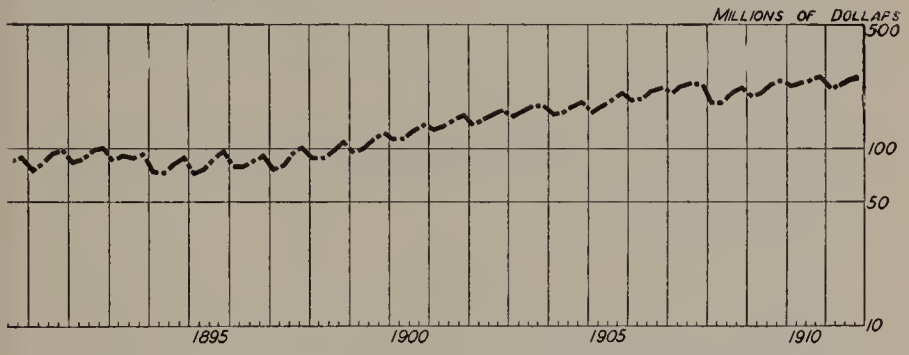
To answer this question it has seemed best to use the gross revenues of the railroads as our test of their activity. Information regarding these is readily available for recent years; for the earlier part of the period under review it has been necessary to construct indexes from samples of varying sizes drawn from reports in periodicals. These indexes are shown in graphic form on pages 204, 205, and 207. A full description of the indexes, to-

gether with the data, will be found in Appendix E. In this chapter we summarize the results of a comparison between the indexes of revenues and our record of equipment buying. For this purpose we have broken the story into sections dealing with the same subperiods as were used in Chapters III to XII.

I. RAILROAD GROSS EARNINGS AND RAILROAD PURCHASING

1869-1873. During the period from 1869 to the panic of 1873 there was a small increase, quarter by quarter,

GROSS EARNINGS, 1869-1911



in the gross earnings of the railroads. During the first quarter of each year there was a pronounced seasonal decrease in income, but if corresponding quarters of successive years be compared it will be seen that steady gains were registered throughout the period. It is impossible to detect any particular time as that of an outstandingly large increase which might be presumed to correspond to a business recovery.

The data included in the index for these few years do not establish any conclusions in regard to the priority existing between changes in the flow of railroad income and in the volume of railroad purchases.

The relationship that prevailed during the downswing of the fall of 1873 is easier to interpret. The curve

depicting gross earnings gives no sign of decreasing railroad income for the first three quarters of the year, the situation being represented as quite the other way. But before the end of the second quarter, declines had occurred in the volume of orders for all the major types of railroad equipment.

During the following five years the quarterly totals of gross earnings continued to increase, reflecting the prevailing depression only in a slackening of the upward movement which had characterized the years prior to 1874. The fact that earnings were so well maintained throughout this long continued phase of depression perhaps helps to account for the fact that the railroads continued to purchase equipment in fair volume during most of the time.[1] The slightly rising trend, however, is undoubtedly accounted for by the increased mileage included in our index.

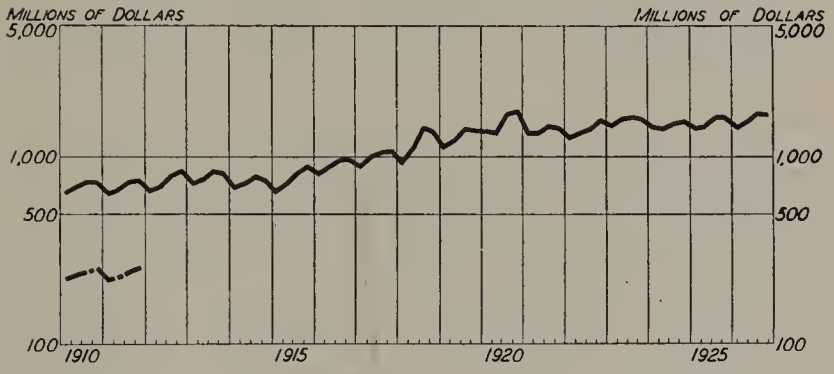
1874-1879. No marked gain in railroad gross earnings is reflected in the index until the last quarter of 1879 is reached, in spite of the large crops harvested in 1877 and in 1878. The index indicates that a small improvement in earnings occurred in the fourth quarter of 1877, but it was no larger than that made in the fourth quarter of 1875 over the corresponding quarter of the preceding year. For the final quarter of 1878 the index does not reach as high a point as for the corresponding quarter of 1877. But in the last quarter of 1879 the expansion in railroad earnings was very pronounced. The index turns sharply upward and continues in the new direction for a number of years. It does

[1] See table on p. 300. The total amounts purchased, of course, were not sufficient to sustain healthy conditions for the builders, especially as so many new companies had been organized in 1872 and 1873.

not seem possible to mistake the time when the railroads commenced to feel the effects of expanding business activity following the long depression of the seventies. But renewed activity in railroad purchasing had commenced in respect to all types of equipment fully a year earlier.

1880-1885. Both gross earnings and orders for equipment increased rapidly during 1880 and 1881. The upward movement of gross earnings was much less marked from the second quarter of 1882. Nevertheless all

INDEX OF RAILWAY GROSS EARNINGS, 1910-1926



through 1882 and 1883 successive quarterly totals of gross earning continued to exceed the figures of corresponding previous quarters. On the other hand, rail orders began to fall off during the last three months of 1881, orders for freight cars and locomotives during the second quarter of 1882, and those for passenger cars in the third quarter of the same year. Thus the railroads began to curtail their buying during this period at a time when gross earnings were still expanding, although at a decreasing rate.

In the first quarter of 1884 there came a sharp drop in the volume of railroad earnings, and for several

quarters thereafter the upward movement was not resumed. Railroad equipment builders received comparatively small orders during the same period. In the third quarter of 1885 occurred a marked gain in gross earnings over the figures for the corresponding quarter of 1884.[2] This was the first quarter of which this was true since the close of 1883. The expansion of earnings in the third quarter of 1885 was followed by a still more pronounced increase in the last quarter of the year. The railroad equipment order curves moved with the curve of gross earnings, since renewed activity in railroad buying had also appeared in the third quarter of 1885, and gained additional momentum during the last months of the year.

1886-1893. Gross revenues increased rapidly during 1886 and 1887, but in 1888 the upward movement slackened pace. It did not halt entirely however, as it had done four years previously. In 1889 the rise in the curve of gross earnings was resumed, and for four years each successive quarterly total exceeded the total of the corresponding quarter of the preceding year. The advances made in 1889 and in 1891 were greater than those in 1890 and 1892, but no interruption in the upward trend occurred at any time.

It will be recalled that orders for railroad equipment of all types declined sharply and rose again during the period just referred to. The volume of orders for rolling stock was smallest during the months extending from the summer of 1890 to the spring of 1891. The flow of rail orders began to recede sharply as early as the third quarter of 1889. There is no apparent connection between

[2] The expansion in earnings may be more reasonably attributed to the settlement of a serious railroad rate war than to an increase in commercial and industrial activity.

changes in railroad gross earnings and this brief depression in the railroad equipment markets.

Passing on to 1893, the year of the panic, the effects of the severe strain to which business was subjected are clearly evident in the earnings index for the third quarter of the year. In both of the preceding quarters the revenue figures had made a marked gain over those of corresponding quarters of earlier years, the increase being more marked in the second quarter than in the first. But in the third quarter the gross earnings were less than those of the corresponding quarter of either 1891 or 1892. Moreover, the railroads received smaller revenues during the third quarter of 1893 than during the second quarter of that year, a thing which had not happened for 20 years.

The volume of orders for equipment placed by the railroads fell off sharply in 1893 also, the decline with respect to all the major types of equipment beginning during the second quarter of the year. The movement of the order curves was ahead of that of the index of gross earnings.

1894-1897. In 1894 another sharp drop in gross earnings occurred, the record of every quarter being below that of any corresponding quarter for four years back.

Revenues increased very sharply during the last two quarters of 1895, under the influence of the short business recovery which developed at that time. Railroad purchasing was marked by a small expansion in 1895 also, the movement tending to precede slightly the rise in the index of gross earnings. The next year, 1896, was much like 1894, so far as gross earnings were concerned. Quarter by quarter revenues failed by a wide margin to reach the totals of 1895, and in the opening

quarter of 1897 they fell to the lowest point reached since 1890. The record of the second quarter was somewhat better although by no means startling. A sharp increase occurred in the third quarter, followed by a record high figure in the fourth. This marked increase in the earnings of the railroads was accompanied by renewed activity in the purchasing of freight and passenger cars, and was preceded by five or six months by largely expanded orders for rails and locomotives.

1898-1902. Gross earnings grew with great rapidity in the succeeding years, especially during the four years from 1899 to 1902, the upward trend of the curve being steeper then than during any previous period covered by our index. The slight pause in the upward movement of trade and industrial activity which occurred in 1900 was not reflected appreciably in the index of gross earnings, although the volume of railroad purchasing fell off markedly at the time.

1903-1907. The first slackening of the rate of increase in gross earnings occurred in the last quarter of 1903. The figures for that quarter, while considerably larger than for any earlier corresponding quarter, did not maintain the rate of increase that these previous quarters had established. Furthermore, the figures were only slightly larger than those for the third quarter, which in itself was an unfavorable omen. In the following year, while the revenues of the railroads were a little larger in the first quarter than during the corresponding quarter of 1903, the revenues of both the second and third quarters were under the records made the previous year. The railroads evidently experienced a real slackening in the demand for their services, beginning with the fourth quarter of 1903. This declining

movement was preceded by a similar movement in the volume of railroad purchasing. Orders for all types of equipment, except freight cars, fell off during the fourth quarter of 1902, and in the second quarter of 1903 the purchases of freight cars also decreased very considerably.

The business depression of 1903-04 was of short duration and of moderate intensity. The stirrings of renewed business activity were reflected in the gross earnings index as early as the fourth quarter of 1904, and in more pronounced fashion in the second and succeeding quarters of 1905. The railroads thereafter enjoyed another, but briefer, period of rapidly increasing revenues similar to that prior to 1903. In the markets for railway rolling stock a recovery of activity occurred during the third quarter of 1904. Rail orders picked up in the fourth quarter. The following two years, in which returns to the railroads grew so rapidly, were characterized also by an unprecedented volume of orders for railway equipment.

The upward trend of the railroad revenues which had commenced in the fourth quarter of 1904 ended in the third quarter of 1907. The railroads received during the fourth quarter of 1907 only slightly larger returns than during the second quarter, and much less than in the third. This slump in earnings was preceded several months by decreased railroad buying. Orders for locomotives, freight, and passenger cars began to decline very appreciably early in 1907, and late in the spring the rail markets also suffered a falling off in demand.

1908-1914. Railroad income was low all through 1908 and the first half of 1909. Earnings made a remarkable gain during the third quarter of 1909, but

is was not until the fourth quarter of 1909 that the gross earnings of earlier corresponding quarters were exceeded. Freight car and passenger car buying revived in the third quarter of 1908 and locomotive buying in the second quarter of 1909. Rail orders did not begin to flow in to the rolling mills in large quantity till the fourth quarter of 1909.

The rise in gross earnings continued, with lessening rapidity through 1910, and then came to a halt, the revenues of 1911 being slightly less than those of 1910. Locomotive buying was well maintained through part of the third quarter of 1910, but buying of the other major types of railway equipment declined several months earlier.

Beginning with the first quarter of 1912, the railroads again enjoyed a brief period of expanding business. Earnings for the year as a whole were considerably larger than in previous years. Orders for railway equipment also made large gains over the figures for 1910 and 1911. The purchasing of freight cars and rails revived in the last quarter of 1911, that of locomotives and passenger cars in the first quarter of 1912.

The third quarter of 1913 marked the close of the upswing in railroad earnings and in the following quarter, in spite of seasonal tendencies to the contrary, revenues declined. This recession of earnings had been anticipated nine months by a decline in the orders for rails. Orders for rolling stock had also fallen off during the early months of 1913.

1914-1919. The year 1914 was marked by smaller revenues for the railroads than was either of the previous two years, and by dull markets for the railway equipment builders. The turn came in the second quar-

ter of 1915. Stimulated by the demands of the Allied nations, exports increased rapidly, and the volume of railroad revenues mounted by leaps and bounds. This remarkable recovery in railroad earnings clearly preceded the recovery of activity in the purchasing of railroad equipment. It was the first occasion on which we have found such a sequence.

Earnings continued to increase at a quite unprecedented rate during the succeeding years, but railroad purchases lagged. The railroads bought freely during the latter part of 1915, and equipment orders in 1916 were comparatively large. But in number of units purchased the old records were hardly approached. During 1917 the volume of orders was very small, and, as has been noted previously, the inauguration of Federal control in 1918 caused the equipment order curves to take on a new character. Buying for all roads was pooled There was obviously little relationship between railway income and the purchases of equipment.

1920-1926. In March, 1920, when the roads were restored to private control, the index of gross income was tending steadily downward. This movement persisted through the second quarter, but in the third the revenues made an extraordinary gain. On the other hand, orders for rolling stock which had reached the books of the builders in fairly large amounts during March and April, declined sharply in the immediately succeeding months and showed no signs of reviving during the remainder of the year. Purchases of rails were in small volume, and most of them were placed in January and February.

In the final quarter of 1920 railroad revenues touched a high point not equalled during any other quarter

included in this inquiry. In the next quarter they took a drop which created another record. The trend of revenues was downward until the second quarter of 1922. It continued upward through the remainder of the year and the first two quarters of 1923. It will be recalled that railway equipment purchases were relatively small through the greater part of 1920 and 1921. But in the last quarter of 1921 orders for all the major types of equipment began to appear in increased volume. This was especially true of freight cars and rails. The railroads continued to buy very freely all through 1922 and during the first quarter of 1923. The revenues of the railroads increased only slightly during the third quarter of 1923, the gain being smaller than in any previous corresponding quarter for three years. This may be considered to mark the beginning of the slump in gross earnings which characterized all of 1924 as well as the first quarter of 1925. Thereafter the index of gross earnings rose for the remainder of the period covered by the inquiry.

The behavior of the order curves during the years just mentioned was quite different from that of the curve of gross earnings. Rail orders showed no recession corresponding to the drop in earnings which began in the third quarter of 1923. Rolling stock orders did decrease very sharply in the second and third quarters of 1923, but the decline was of extremely brief duration. Business for the railway equipment builders was much better in 1924 than in 1923; in fact, it was the best year, except 1922, since the Great War.

Equipment was bought in smaller volume both in 1925 and in 1926. As is observed elsewhere, this decline seems to be the outgrowth of permanently reduced

demands for rolling stock, and not a temporary recession in buying activity caused by current business conditions or other circumstances.

II. SUMMARY

The findings of this inquiry relative to the relationship in point of time between railroad purchasing and railroad revenues can be stated very briefly.

(1) The railroads have bought most freely when their earnings were largest. Usually a change in the volume of gross earnings has been accompanied by a like movement in the buying of all the major types of equipment (locomotives, freight cars, passenger cars, rails), but in a few cases it has been true of only one or two types.

(2) With one exception,[3] a change in the direction of the index of gross earnings, whether up or down, has been anticipated in each instance by a similar change in the volume of orders for railway equipment. Generally speaking, the lag in the movement of the gross earnings curve has been greatest in those instances in which the movement was downward.

(3) In recent years, by which are meant those since the depression of 1908, there has been a tendency for the curves of earnings and of purchases to show less dependence on one another.

[3] The rise of the gross earnings index in 1915.

APPENDICES

APPENDIX A

STATISTICAL DATA

I. Rolling Stock and Rails Ordered by Railroads, by Quarters, 1870–1926 [a]

Year and Quarter	Locomotives		Freight Cars	Passenger Cars	Rails (in long tons)
	Baldwin Locomotive Works	All Other			
1870:					
First	49	6	521	20	23,250
Second	96	7	603	8	35,570
Third	52	20	170	76	23,400
Fourth	56	15	628	37	55,025
1871:					
First	112	13	665	143	14,400
Second	133	6	710	80	33,250
Third	55	30	410	54	19,100
Fourth	197	11	7,650	19	39,000
1872:					
First	160	210	1,323	43	84,500
Second	58	79	430	15	28,050
Third	102	146	2,180	100	11,500
Fourth	161	25	1,540	56	36,100
1873:					
First	68	31	2,460	112	27,000
Second	53	237	3,380	42	17,900
Third	26	4	570	40	27,700
Fourth	12	28	430	2	13,700
1874:					
First	9	93	1,001	96	12,100
Second	34	29	502	18	6,850
Third	12	24	125	14	33,300
Fourth	15	7	6,408	13	62,580
1875:					
First	23	53	3,565	169	53,111
Second	22	68	1,583	45	28,150
Third	19	79	3,955	329	121,606
Fourth	37	49	1,532	96	62,700

I. Rolling Stock and Rails Ordered by Railroads, by Quarters, 1870–1926 [a] (Continued)

Year and Quarter	Locomotives		Freight Cars	Passenger Cars	Rails (in long tons)
	Baldwin Locomotive Works	All Other			
1876:					
First	49	81	2,342	286	73,637
Second	53	47	1,222	122	38,235
Third	34	51	2,331	63	60,360
Fourth	6	51	2,745	70	54,150
1877:					
First	22	44	1,834	40	138,600
Second	20	45	3,167	70	67,450
Third	29	44	1,493	16	77,190
Fourth	21	34	1,490	35	165,000
1878:					
First	22	91	4,006	131	84,675
Second	32	54	7,939	97	106,002
Third	32	62	7,105	92	99,500
Fourth	43	134	4,727	80	174,750
1879:					
First	67	119	10,000	198	118,650
Second	67	80	8,707	117	336,500
Third	90	143	12,665	101	197,500
Fourth	172	260	21,421	107	107,200
1880:					
First	131	382	10,909	327	226,000
Second	86	149	8,182	208	49,040
Third	77	65	11,015	128	569,000
Fourth	385	408	28,289	244	587,600
1881:					
First	177	518	22,856	267	340,158
Second	250	323	25,657	399	363,988
Third	93	233	9,485	260	355,500
Fourth	115	255	18,195	381	136,400
1882:					
First	199	221	21,318	417	108,000
Second	46	195	9,311	621	40,800
Third	44	172	9,052	231	165,200
Fourth	10	268	16,189	361	182,370
1883:					
First	23	189	8,676	336	161,500
Second	87	245	5,540	183	108,000
Third	52	221	7,544	192	80,700
Fourth	43	117	11,083	101	515,200

I. Rolling Stock and Rails Ordered by Railroads, by Quarters, 1870–1926 [a] (Continued)

Year and Quarter	Locomotives		Freight Cars	Passenger Cars	Rails (in long tons)
	Baldwin Locomotive Works	All Other			
1884:					
First	29	137	7,098	197	255,000
Second	47	89	5,240	280	108,000
Third	52	52	5,329	44	218,000
Fourth	16	102	2,170	100	152,200
1885:					
First	41	86	5,015	86	89,200
Second	14	96	5,105	154	172,500
Third	90	146	8,564	157	321,200
Fourth	106	148	10,050	331	545,100
1886:					
First	122	169	5,417	203	264,000
Second	50	153	9,507	146	280,450
Third	194	313	12,289	211	492,000
Fourth	231	302	23,040	415	389,000
1887:					
First	192	466	30,596	456	237,200
Second	114	133	9,098	181	361,400
Third	68	129	8,696	125	95,000
Fourth	134	247	26,195	347	265,900
1888:					
First	224	365	25,351	485	259,500
Second	115	245	17,739	339	179,200
Third	59	325	18,905	161	199,200
Fourth	53	251	20,988	222	359,800
1889:					
First	74	157	16,500	322	175,500
Second	236	210	12,900	228	315,900
Third	130	308	20,807	297	224,500
Fourth	239	267	28,302	417	247,000
1890:					
First	167	253	40,508	407	172,000
Second	272	281	23,561	426	198,000
Third	65	282	15,895	231	101,900
Fourth	112	309	13,245	86	77,000
1891:					
First	154	216	11,872	360	165,000
Second	104	147	6,590	396	122,700
Third	62	246	13,369	388	128,750
Fourth	189	255	25,850	877	216,000

I. Rolling Stock and Rails Ordered by Railroads, by Quarters, 1870–1926 [a] (Continued)

Year and Quarter	Locomotives		Freight Cars	Passenger Cars	Rails (in long tons)
	Baldwin Locomotive Works	All Other			
1892:					
First	161	650	30,388	567	183,000
Second	75	132	14,651	549	18,900
Third	57	179	7,630	692	23,000
Fourth	374	213	19,085	665	129,500
1893:					
First	184	483	25,059	518	317,000
Second	46	188	6,525	268	120,900
Third	19	27	4,445	65	12,500
Fourth	105	49	6,690	149	114,900
1894:					
First	35	29	8,844	53	112,000
Second	16	35	3,270	32	46,500
Third	13	76	3,337	74	64,400
Fourth	33	167	3,903	49	60,656
1895:					
First	49	144	16,471	127	134,900
Second	58	187	16,582	120	112,200
Third	46	132	17,533	73	150,100
Fourth	86	134	24,612	75	84,000
1896:					
First	32	189	22,234	256	74,000
Second	82	176	13,204	129	109,000
Third	10	94	6,292	44	68,750
Fourth	38	98	9,000	101	43,000
1897:					
First	54	134	7,138	177	1,006,935
Second	58	251	6,906	146	82,200
Third	51	171	16,856	227	51,500
Fourth	132	205	27,912	133	335,000
1898:					
First	79	197	32,813	438	299,000
Second	87	254	26,263	96	115,000
Third	43	145	17,617	190	87,500
Fourth	142	342	57,649	459	982,000
1899:					
First	223	639	44,331	323	205,800
Second	168	296	26,420	241	66,000
Third	131	221	46,324	285	380,500
Fourth	321	680	37,128	612	401,500

I. Rolling Stock and Rails Ordered by Railroads, by Quarters, 1870–1926 [a] (Continued)

Year and Quarter	Locomotives		Freight Cars	Passenger Cars	Rails (in long tons)
	Baldwin Locomotive Works	All Other			
1900:					
First	274	434	25,474	361	156,000
Second	21	351	18,437	233	47,000
Third	95	151	32,907	153	400,000
Fourth	272	700	63,282	666	1,064,500
1901:	All Locomotives				
First	670		37,197	628	397,560
Second	788		25,992	363	4,000
Third	327		23,450	205	659,400
Fourth	1,671		98,020	914	724,000
1902:					
First	825		40,132	362	77,000
Second	797		52,348	428	907,000
Third	1,899		44,580	728	756,000
Fourth	752		50,042	702	481,000
1903:					
First	586		44,801	602	184,800
Second	462		18,256	409	570,000
Third	714		19,432	321	224,000
Fourth	310		7,926	342	66,000
1904:					
First	611		19,441	578	140,600
Second	463		19,161	188	251,200
Third	252		34,029	575	128,900
Fourth	1,539		53,212	932	577,500
1905:					
First	1,380		46,007	577	976,713
Second	831		53,351	352	455,000
Third	725		104,739	892	1,436,100
Fourth	2,638		117,821	1,055	545,700
1906:					
First	1,522		71,213	804	674,750
Second	757		30,561	518	1,618,870
Third	954		81,024	1,086	625,550
Fourth	1,654		79,316	544	444,280
1907:					
First	807		52,778	307	144,900
Second	602		28,629	318	931,800
Third	904		24,414	387	159,058
Fourth	295		6,969	67	38,600

I. Rolling Stock and Rails Ordered by Railroads, by Quarters, 1870–1926 [a] (Continued)

Year and Quarter	All Locomotives	Freight Cars	Passenger Cars	Rails (in long tons)
1908:				
First	227	4,781	101	146,600
Second	240	4,382	133	125,500
Third	321	26,431	211	151,700
Fourth	324	16,655	618	310,430
1909:				
First	196	9,004	661	322,250
Second	666	23,537	1,320	581,450
Third	660	56,721	996	856,356
Fourth	1,317	63,877	791	514,245
1910:				
First	763	51,900	1,114	354,150
Second	957	26,806	277	101,950
Third	319	10,059	155	103,600
Fourth	668	15,064	649	616,450
1911:				
First	596	17,626	610	495,145
Second	546	12,403	349	295,850
Third	352	22,705	529	194,884
Fourth	363	47,245	454	575,300
1912:				
First	842	35,481	664	648,850
Second	670	38,193	593	340,597
Third	807	24,660	229	984,100
Fourth	1,090	77,340	600	634,614
1913:				
First	1,025	54,533	1,023	209,500
Second	450	13,070	238	89,500
Third	359	55,342	683	195,100
Fourth	324	26,662	506	519,800
1914:				
First	388	27,860	338	164,400
Second	264	34,594	382	316,200
Third	243	8,640	154	83,400
Fourth	85	5,500	177	221,000
1915:				
First	338	9,728	262	408,700
Second	148	28,473	269	299,050
Third	494	30,850	113	572,500
Fourth	501	36,601	587	725,450

I. Rolling Stock and Rails Ordered by Railroads, by Quarters, 1870–1926 [a] (Continued)

Year and Quarter	All Locomotives	Freight Cars	Passenger Cars	Rails (in long tons)
1916:				
First	824	23,853	384	1,373,700
Second	419	10,644	227	349,450
Third	301	23,132	274	187,000
Fourth	817	65,234	783	881,800
1917:				
First	1,909	16,811	440	141,632
Second	684	11,875	90	118,000
Third	266	1,450	62	0
Fourth	236	6,758	5	0
1918:				
First	211	1,025	0	0
Second	1,340	99,510	0	0
Third	7	0	0	0
Fourth	595	0	0	0
1919:				
First	0	1,000	0	0
Second	20	0	0	205,200
Third	56	0	0	0
Fourth	70	2,635	220	419,000
1920:				
First	557	17,874	385	585,000
Second	655	24,642	402	3,500
Third	236	6,865	212	71,500
Fourth	141	7,775	49	835,400
1921:				
First	173	5,605	45	51,000
Second	90	2,410	22	1,700
Third	14	3,125	41	0
Fourth	127	15,706	85	334,000
1922:				
First	80	39,090	411	381,000
Second	385	62,157	851	95,300
Third	1,142	21,577	267	1,225,755
Fourth	552	43,385	463	65,000
1923:				
First	1,269	56,351	1,154	69,000
Second	354	12,112	286	381,000
Third	41	2,450	107	343,000
Fourth	111	16,975	391	636,119

I. Rolling Stock and Rails Ordered by Railroads, by Quarters, 1870–1926 [a] (Continued)

Year and Quarter	All Locomotives	Freight Cars	Passenger Cars	Rails (in long tons)
1924:				
First	482	45,511	696	338,700
Second	248	24,944	407	176,945
Third	190	28,270	603	201,300
Fourth	372	31,505	651	830,000
1925:				
First	170	16,799	457	450,096
Second	165	12,090	227	53,400
Third	169	9,425	478	100,200
Fourth	504	31,650	752	1,167,845
1926:				
First	265	36,915	819	112,200
Second	527	13,288	421	102,028
Third	200	3,705	314	340,400
Fourth	329	9,619	213	1,185,470

[a] Locomotives ordered from Baldwin Locomotive Works 1870–1900 from order books of that company; other data from trade periodicals. See p. 11.

II. Locomotives Ordered from Baldwin Locomotive Works, by Months, 1870–1900 [a]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1870..	16	16	17	27	30	39	33	13	6	15	21	20
1871..	21	41	50	23	14	96	12	31	12	55	49	93
1872..	48	50	62	30	16	12	26	70	6	5	148	8
1873..	3	16	49	28	11	14	3	8	15	8	..	4
1874..	1	5	3	21	6	7	3	2	7	10	2	3
1875..	2	5	16	7	10	5	6	4	9	16	21	..
1876..	16	22	11	24	3	26	19	2	13	4	2	..
1877..	16	1	5	4	4	12	1	13	15	7	9	5
1878..	5	6	11	10	17	5	11	12	9	25	3	15
1879..	8	17	42	13	13	41	21	41	28	46	17	109
1880..	59	42	30	27	20	39	30	27	20	101	112	172
1881..	36	38	103	67	121	62	81	5	7	11	9	95
1882..	78	51	70	11	25	10	8	20	16	0	7	3
1883..	1	4	18	43	33	11	50	1	1	17	12	14
1884..	17	4	8	5	20	22	32	16	4	2	4	10
1885..	15	4	22	11	2	1	31	45	14	12	21	73
1886..	79	12	31	17	9	24	89	60	45	64	88	79
1887..	105	57	30	28	26	60	8	27	33	10	15	109
1888..	94	115	15	51	64	0	31	13	15	29	8	16
1889..	11	25	38	63	131	42	53	14	63	53	104	82
1890..	2	62	103	96	124	52	8	33	24	44	23	45
1891..	69	19	66	17	61	26	7	43	12	37	52	100
1892..	32	15	114	19	20	36	17	33	7	99	48	227
1893..	39	110	35	26	7	13	15	4	0	12	78	15
1894..	9	17	9	3	9	4	4	6	3	10	9	14
1895..	21	21	7	22	24	12	13	11	22	36	31	19
1896..	7	15	10	17	40	25	6	4	0	21	13	4
1897..	16	14	24	25	5	28	10	19	22	30	26	76
1898..	16	38	25	13	28	46	12	5	26	48	35	59
1899..	72	69	82	60	71	37	2	48	81	139	119	63
1900..	9	80	185	3	12	6	5	47	43	61	110	101

[a] From order books of the Baldwin Locomotive Works.

III. Proportion of Baldwin Locomotive Works Orders Reported in Trade Journals, 1870–1900

Year	Locomotives Ordered from Baldwin		*Number Reported in Magazines as Percentage of Total*
	According to Baldwin Records	As Reported in Magazines	
1870.....	253	0	*0.00*
1871.....	497	50	*10.06*
1872.....	481	50	*10.39*
1873.....	159	41	*25.78*
1874.....	70	15	*21.42*
1875.....	101	24	*23.76*
1876.....	142	76	*53.52*
1877.....	92	49	*53.26*
1878.....	129	56	*43.41*
1879.....	396	254	*64.14*
1880.....	679	341	*50.22*
1881.....	635	327	*51.48*
1882.....	299	165	*55.18*
1883.....	205	97	*47.32*
1884.....	144	71	*49.31*
1885.....	251	98	*39.04*
1886.....	597	252	*43.89*
1887.....	508	186	*36.61*
1888.....	451	242	*53.66*
1889.....	679	476	*70.10*
1890.....	616	476	*77.27*
1891.....	509	318	*62.48*
1892.....	667	488	*73.16*
1893.....	354	267	*75.42*
1894.....	95	64	*67.37*
1895.....	239	193	*80.74*
1896.....	168	166	*98.81*
1897.....	295	270	*91.53*
1898.....	351	323	*92.02*
1899.....	843	778	*92.29*
1900.....	674	648	*96.14*

IV. Yearly Totals of Equipment Orders Reported from Month to Month in Magazines, Compared with Domestic Orders Reported in Railway Age Annual Summary, 1901–1926

Year	Locomotives			Freight Cars			Passenger Cars		
	Reported Annually in *Railway Age*	Reported Currently in Magazines	*Current Reports as Percentage of Annual*	Reported Annually in *Railway Age*	Reported Currently in Magazines	*Current Reports as Percentage of Annual*	Reported Annually in *Railway Age*	Reported Currently in Magazines	*Current Reports as Percentage of Annual*
1901	4,175	3,456	*82.7*	180,151	184,659	*102.5*	2,125	2,110	*99.3*
1902	4,320	4,273	*98.9*	173,337	187,102	*107.9*	2,310	2,220	*96.1*
1903	2,921	2,072	*70.9*	90,088	90,415	*100.4*	2,033	1,674	*82.3*
1904	2,211	2,865	*129.5*	113,421	125,843	*111.0*	1,709	2,273	*133.0*
1905	5,832	5,574	*95.6*	307,752	321,918	*104.6*	2,750	2,876	*104.6*
1906	4,742	4,887	*103.1*	269,686	262,114	*97.2*	2,646	2,952	*111.6*
1907	2,823	2,608	*92.4*	131,528	112,790	*85.8*	1,398	1,079	*77.2*
1908	972	1,112	*114.4*	50,117	52,249	*104.3*	1,005	1,063	*105.8*
1909	2,914	2,839	*97.4*	176,126	153,139	*86.9*	3,788	3,768	*99.5*
1910	3,350	2,707	*80.8*	118,089	103,829	*87.9*	2,974	2,195	*73.8*
1911	2,390	1,857	*77.7*	106,776	99,979	*93.6*	1,949	1,942	*99.6*
1912	3,473	3,409	*98.2*	183,056	175,674	*96.0*	2,546	2,086	*81.9*
1913	2,845	2,158	*75.9*	125,018	109,607	*87.7*	2,823	2,450	*86.8*
1914	1,026	980	*95.5*	72,040	76,594	*106.3*	1,228	1,051	*85.6*
1915	1,395	1,481	*106.2*	99,348	108,532	*109.2*	1,831	1,231	*67.2*
1916	2,588	2,361	*91.2*	143,232	122,863	*85.8*	1,987	1,668	*83.9*
1917	2,363	2,276	*96.3*	38,982	36,894	*94.6*	1,136	597	*52.6*
1918	2,554	2,153	*84.3*	101,230	100,535	*99.3*	6	0	....
1919	87	146	*167.8*	5,363	3,365	*62.7*	335	220	*65.7*
1920	1,749	1,589	*90.9*	80,079	57,156	*71.4*	1,615	1,048	*64.9*
1921	207	404	*195.2*	21,480	26,846	*125.0*	220	193	*87.7*
1922	2,440	2,159	*88.5*	166,989	166,209	*99.5*	2,267	1,992	*87.9*
1923	1,840	1,775	*96.5*	81,559	87,888	*107.8*	1,839	1,938	*105.4*
1924	1,310	1,292	*98.6*	136,298	130,230	*95.5*	2,596	2,357	*90.8*
1925	999	1,008	*100.9*	82,482	69,964	*84.8*	2,187	1,914	*87.5*
1926	1,542	1,320	*85.6*	70,495	63,527	*90.1*	2,162	1,767	*81.7*

V. Yearly Totals of Rail Orders Reported from Month to Month in Magazines, Compared with Apparent Consumption of Rails, 1870–1926 [a]

Year	Apparent Consumption (In thousands of long tons)	Rail Orders Reported (In thousands of long tons)	*Rail Orders as Percentage of Apparent Consumption*
1870.....	910	137	*15.1*
1871.....	1,198	106	*8.8*
1872.....	1,366	160	*11.7*
1873.....	1,025	86	*8.4*
1874.....	747	115	*15.4*
1875.....	724	266	*36.7*
1876.....	782	226	*28.9*
1877.....	676	448	*66.3*
1878.....	780	465	*59.6*
1879.....	1,030	760	*73.8*
1880.....	1,564	1,432	*91.6*
1881.....	1,991	1,196	*60.1*
1882.....	1,705	496	*29.1*
1883.....	1,247	865	*69.4*
1884.....	1,019	733	*71.9*
1885.....	971	1,128	*116.2*
1886.....	1,639	1,425	*86.9*
1887.....	2,277	960	*42.2*
1888.....	1,460	998	*68.4*
1889.....	1,519	963	*63.4*
1890.....	1,869	549	*29.4*
1891.....	1,296	632	*48.8*
1892.....	1,544	354	*22.9*
1893.....	1,119	565	*50.5*
1894.....	1,009	284	*28.1*
1895.....	1,292	481	*37.2*
1896.....	1,057	295	*27.9*
1897.....	1,500	1,476	*98.4*
1898.....	1,680	1,484	*88.3*
1899.....	1,997	1,054	*52.8*

V. Yearly Totals of Rail Orders Reported from Month to Month in Magazines, Compared with Apparent Consumption of Rails, 1870–1926 [a] (Continued)

Year	Apparent Consumption (In thousands of long tons)	Rail Orders Reported (In thousands of long tons)	*Rail Orders as Percentage of Apparent Consumption*
1900.....	2,026	1,667	*82.3*
1901.....	2,558	1,785	*69.8*
1902.....	2,944	2,221	*75.4*
1903.....	3,057	1,045	*34.2*
1904.....	1,906	1,098	*57.6*
1905.....	3,098	3,414	*110.2*
1906.....	3,655	3,363	*92.0*
1907.....	3,299	1,274	*38.6*
1908.....	1,726	734	*42.5*
1909.....	2,726	2,274	*83.4*
1910.....	3,291	1,176	*35.7*
1911.....	2,405	1,561	*64.9*
1912.....	2,885	2,608	*90.4*
1913.....	3,053	1,014	*33.2*
1914.....	1,793	785	*43.8*
1915.....	1,891	2,006	*106.1*
1916.....	2,340	2,792	*119.3*
1917.....	2,441	260	*10.7*
1918.....	2,096	0	*0.0*
1919.....	1,568	624	*39.8*
1920.....	2,055	1,495	*72.7*
1921.....	1,879	387	*20.6*
1922.....	1,921	1,832	*95.4*
1923.....	2,667	1,429	*53.6*
1924.....	2,268	1,547	*68.2*
1925.....	2,670	1,772	*66.4*
1926.....	3,085	1,740	*56.4*

[a] For source of data and methods of computation see page 38, and tables in Chapters IV to XII.

VI. Average Prices of Bessemer Steel Rails at Mills in Pennsylvania [a]
(In dollars per gross tons)

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1868.....	165.00	167.50	174.00	172.00	165.00	162.50	150.00	150.00	150.00	150.00	148.00	147.50	158.46
1869.....	145.00	143.25	135.00	134.00	130.25	128.00	130.00	130.00	130.00	130.50	130.25	120.00	132.19
1870.....	110.00	110.00	108.50	107.00	106.00	109.25	110.00	110.00	108.75	101.50	102.50	98.00	106.79
1871.....	95.00	96.00	106.00	95.00	103.00	104.00	103.75	104.00	106.00	105.75	105.25	106.50	102.52
1872.....	104.50	104.00	104.25	111.50	110.00	113.00	114.50	115.25	114.00	113.50	118.00	120.75	111.94
1873.....	121.00	120.00	122.50	120.25	120.00	121.75	121.75	121.75	118.00	120.00	120.00	120.00	120.58
1874.....	117.50	117.50	115.00	98.67	98.33	96.25	91.00	89.25	78.25	78.25	75.67	75.67	94.28
1875.....	71.00	71.00	71.00	69.00	69.00	69.00	69.00	69.00	69.00	67.00	66.00	65.00	68.75
1876.....	67.00	65.00	62.00	62.00	62.00	60.00	59.00	59.00	56.00	54.00	53.00	52.00	59.25
1877.....	49.00	49.00	49.00	49.00	47.25	46.50	45.25	44.75	44.00	42.25	40.50	40.50	45.58
1878.....	41.00	41.50	41.50	42.00	43.50	43.00	43.50	42.50	42.50	42.50	42.00	41.00	42.21
1879.....	41.00	42.00	43.00	42.50	42.00	43.00	44.00	48.00	50.00	55.00	61.00	67.00	48.21
1880.....	75.00	85.00	82.00	75.00	65.00	63.75	62.50	63.75	61.25	60.00	59.00	58.00	67.52
1881.....	60.00	62.00	62.50	63.00	63.00	60.00	61.00	60.00	60.00	60.00	61.50	60.00	61.08
1882.....	58.00	55.00	54.00	52.75	48.75	48.25	48.00	47.00	45.00	44.25	42.00	39.00	48.50
1883.....	40.00	39.50	39.00	38.50	38.00	38.00	38.00	38.00	37.50	37.00	35.00	34.50	37.75
1884.....	34.00	34.00	34.00	34.00	33.00	32.00	30.00	28.00	27.00	28.00	28.00	27.00	30.75
1885.....	27.00	27.00	26.50	26.00	27.00	27.25	27.25	27.25	29.00	30.50	33.00	34.50	28.52
1886.....	34.50	34.50	34.50	34.50	34.50	34.50	.34.25	34.00	34.00	34.50	34.50	36.00	34.52
1887.....	38.50	39.50	39.50	39.25	39.00	39.00	38.50	37.00	36.00	34.25	32.50	32.00	37.08
1888.....	31.50	31.50	31.50	31.50	31.00	30.00	30.00	29.00	28.50	28.00	27.50	28.00	29.83
1889.....	27.50	27.50	27.50	27.50	27.00	27.50	28.00	28.00	29.50	32.00	34.00	35.00	29.25
1890.....	35.25	35.00	34.00	33.50	31.35	31.50	31.50	31.25	30.50	30.00	29.00	28.50	31.78
1891.....	29.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	29.92
1892.....	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
1893.....	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	27.50	25.00	24.00	28.12
1894.....	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
1895.....	22.00	22.00	22.00	22.00	22.00	22.00	24.00	24.00	28.00	28.00	28.00	28.00	24.33
1896.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1897.....	25.00	20.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.75

VI. Average Prices of Bessemer Steel Rails at Mills in Pennsylvania (Continued)

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1898.....	18.00	18.00	18.00	18.00	18.00	17.50	17.00	17.50	17.50	17.50	17.00	17.50	17.62
1899.....	18.50	20.25	24.80	25.75	25.20	27.25	28.25	31.00	32.50	34.00	35.00	35.00	28.12
1900.....	35.00	34.20	35.00	35.00	35.00	35.00	35.00	35.00	30.25	26.00	26.00	26.00	32.29
1901.....	26.00	26.00	26.00	26.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	27.33
1902.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1903.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1904.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1905.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1906.....	28.00	28.00	28.00	28.00	28.00	27.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1907.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1908.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1909.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1910.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1911.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1912.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1913.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1914.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1915.....	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
1916.....	28.00	28.00	28.00	28.00	33.00	33.00	33.00	33.00	33.00	33.00	36.00	38.00	32.00
1917.....	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00
1918.....	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00
1919.....	55.00	55.00	52.50	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	47.29
1920.....	45.00	45.00	49.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	50.00	52.42
1921.....	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	43.75 [b]	40.00	40.00	44.06
1922.....	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	43.00	43.00	43.00	40.75
1923.....	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00
1924.....	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00
1925.....	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00
1926.....	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00

[a] *Annual Statistical Report* of the American Iron and Steel Association, 1904; and of the American Iron and Steel Institute, 1912, 1916, and 1926
[b] Bessemer or open-hearth rails from October 22, 1921.

APPENDIX B

FLUCTUATIONS IN BUSINESS ACTIVITY, 1870-1914

For the purpose of this study it was necessary to fix the limits of the different phases of the business cycle, which have occurred since 1870, with considerable precision. The movements had to be timed in terms of months or quarters, as the use of longer periods would have made it impossible to determine whether changes in the volume of railroad orders for equipment preceded, accompanied, or followed similar changes in commercial and industrial activity. Moreover, with longer periods the proportionate amounts of equipment that were bought during each of the cyclical phases could not have been determined. It would not do merely to say that during 1897 a long depression was terminated by a business recovery, and that in the course of another year this upswing assumed all the characteristics of genuine prosperity. Definite turning points had to be decided upon and accepted as a working basis.

In this inquiry no attempt was made to carry out a complete independent investigation of the movements of the business cycle as a whole. Full use was made of the published studies of others who have worked on this problem. Statistical measures of business activity were found to be of great value, including both indexes devised for the purpose, such as Frickey's index of bank clearings, and those of a less formal character, such as the figures on merchandise imports. Contemporary trade comment was very helpful in determining the general nature of business conditions, especially for those periods which have not been subjected to detailed investigation. The following

tabulation indicates the dates which we have taken as marking the transition from one phase of the business cycle to the next.

1871	May	Recovery
1872	January	Prosperity
1873	September	Recession
	November	Depression
1879	April	Recovery
1880	January	Prosperity
1882	September	Recession
1884	May	Depression
1885	October	Recovery
1887	January	Prosperity
1890	November	Recession
1891	January	Depression
	August	Recovery
1892	January	Prosperity
1893	April	Recession
	August	Depression
1897	August	Recovery
1898	November	Prosperity
1903	August	Recession
	December	Depression
1904	September	Recovery
1905	January	Prosperity
1907	August	Recession
	November	Depression
1908	August	Recovery
1909	July	Prosperity
1910	April	Recession
	July	Depression
1912	January	Recovery
	April	Prosperity
1913	April	Recession
	October	Depression
1915	September	Recovery
1916	January	Prosperity
1918	December	Recession
1919	April	Recovery
	October	Prosperity
1920	April	Recession
	October	Depression
1922	January	Recovery
	October	Prosperity
1923	June	Recession
1924	April	Depression
	July	Recovery
1925	January	Prosperity

In Chapters III to XII we described briefly the condition of business during the periods discussed in those chapters. Space did not permit us, however, to develop in detail the evidence for those conclusions, or to weigh this evidence against that which may point to other conclusions. In this appendix we present a more detailed narrative of the condition of business during each of the periods which we have reviewed, and cite the conclusions of other students. In cases where there seems to be no doubt as to the situation, our statement is brief; where there is disagreement we examine the evidence more fully. The relative amount of space which we give to different periods, therefore, does not reflect the relative importance of the history of those periods, but only the degree of ambiguity we find in the records.

RAILROAD PURCHASING

I. BOOM AND PANIC, 1870-1873

The dullness of business in 1870 is reflected generally in trade reports. There was apparently a slight improvement in the early fall,[1] but reports became pessimistic in the latter part of October and continued so for the remainder of the year. In December the *Commercial and Financial Chronicle* said: "Our markets usually become quiet with the approach of the holidays but we have rarely to notice such stagnation as now prevails."

1871. In 1871 there came a marked improvement. The rate of the decline of wholesale prices grew less, and finally in the fourth quarter of the year the quarterly index turned upward—the first advance in three years.[2] In the fall there was a very considerable improvement in mercantile lines. During crop moving time the demand for funds from the interior became so great that a "panic" developed on the stock exchange. This stringency was soon relieved through the importation of gold from Europe. Concerning the iron trade it was reported that "the year 1871 was on the whole a prosperous one, notwithstanding the many diverse influences," these being in particular the war in Europe and a coal strike.[3] The *Chronicle* in surveying the twelve months as a whole said: "The past year has been much more free from commercial trouble and more favorable to material growth and industrial progress than any previous year since the war."[4]

1872. Trade and industry were very active in 1872. There was a marked increase in the output of farms and

[1] The *Bankers Magazine* in October reported that "fall business has been large and remittances prompt. We hear of no failures of importance in Eastern or Western cities."

[2] Mitchell, W. C., *Gold, Prices, and Wages Under the Greenback Standard,* 1908, p. 60.

[3] New York Chamber of Commerce, *Annual Report,* 1871-1872, p. 91.

[4] *Commercial and Financial Chronicle,* January 6, 1872, p. 5.

mines, and probably also of factories.[5] Commodity prices tended upward during the year and the trade reports were generally favorable. Another increase in merchandise imports, this time to the amount of $83,000,000 over 1871, afforded evidence of the high prosperity of the period. In the iron industry the year " proved itself successful beyond precedent. . . . Indeed it is questionable if in the whole history of the iron trade in the United States there can be selected a single year that will compare with 1872."[6]

1873. The condition of prosperity which had prevailed throughout 1872 continued until September, 1873, the month of the panic. Commodity prices worked upward during the first two quarters of 1873 and the volume of output in the major fields of industry equalled the high level of the year before. The panic which occurred on September 18, 1873, with the failure of Jay Cooke and Company marked the end of the period of prosperity.

The impression given by the trade reports is confirmed, on the whole, by the scanty statistical data, the more important of which are assembled in the table on page 239. They reflect the uneven, halting character of business in the years prior to the revival of 1871. The signs of improvement which appeared in 1869 were not borne out by the developments of the succeeding year. Prices continued to decline; the iron and steel industry suffered reverses; the volume of immigration was smaller, and the number of commercial failures increased sharply. The other series, while regis-

[5] Compare "' Business and Financial Conditions Following the Civil War," Warren M. Persons, Pierson M. Tuttle, and Edwin Frickey, in *The Review of Economic Statistics,* 1920, Vol. II, Supplement, p. 25. But note that in this study the index numbers of physical production of manufactured goods are based entirely on one series—that of the production of rolled iron.

[6] New York Chamber of Commerce, *Annual Report,* 1872-1873, p. 56.

tering slight gains, failed to maintain the rate of increase of the preceding year.[7]

In 1871 there was a large increase in imports, pig iron production picked up, and the price level moved upward for the first time since 1866. The slight falling off in the flow of immigration in 1871 may be accounted for by the great increase of industrial activity in western Europe which occurred almost immediately after the close of the Franco-Prussian War. In 1872, freight traffic, pig iron production, immigration, and imports all registered sharp gains. These statistics point to a recovery of business in 1871 and to real prosperity in 1872. The only series clearly out of line with the generally favorable trend is that of commercial failures.[8]

The investigators who have studied the period are in substantial agreement that the recovery stage of the cycle began in 1871 and that there ensued something less than two years of real prosperity. Dr. W. L. Thorp in characterizing the years in question employs the following "phrase summaries":

1870 "Recession; mild depression."
1871 "Revival; prosperity."
1872 "Prosperity."
1873 "Prosperity; panic; recession; depression."[9]

In an unpublished study of the period from 1866 to 1880 R. N. Owens reaches the conclusion that "great pros-

[7] In weighing the significance of the growth in the number of ton miles of freight hauled, allowance should be made for the fact that railway mileage was increased by more than 10 per cent in 1869.

[8] The fall in Dun's annual price index is slight of itself, and furthermore is in disagreement with Mitchell's quarterly figures, which are as follows:

Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
1871	142	140	137	139
1872	141	145	139	143

[9] Thorp, W. L., *Business Annals*, National Bureau of Economic Research, 1926, pp. 130-131.

perity" did not appear until 1872.[10] "Dull markets" persisted throughout 1869; in 1870 business was "somewhat better than in 1869 but still depressed," and even in 1871, "many industries reported unsatisfactory trade." In 1872 the "volume of trade and production was large," and "trade continued active until the autumn" of 1873.

INDEXES OF ECONOMIC ACTIVITY, 1868–1873

Year	Merchandise Imports[a] (In millions of dollars)	Imports of Crude Materials for Use in Manufacturing[b] (In millions of dollars)	Immigrants[c] (In thousands)	Number of Commercial Failures[d]	Wholesale Prices[e] (Index number)	Production of Pig Iron[f] (In thousands of long tons)	Railway Freight Traffic[g] (In millions of net ton miles)
1868...	368	39	289	2,608	159	1,431	9,105
1869...	438	48	385	2,799	143	1,711	11,170
1870...	461	56	356	3,546	129	1,665	13,041
1871...	573	67	347	2,915	132	1,707	14,768
1872...	656	92	438	4,069	131	2,548	17,008
1873...	595	94	423	5,183	124	2,561	19,825

[a] From *Monthly Summary of Foreign Commerce.*

[b] Year ending June 30. From *Statistical Abstract of the United States* 1906, p. 662.

[c] From Iron and Steel Association, *Annual Statistical Report*, 1904, p. 117.

[d] From *Statistical Abstract of the United States*, 1906, p. 689.

[e] Dun's Index Numbers: quoted in Mitchell, W. C., *Gold, Prices, and Wages Under the Greenback Standard*, 1908, pp. 659–60.

[f] From *Statistical Abstract of the United States*, 1906, p. 677.

[g] Revenue and non-revenue freight carried on Class I railroads in the United States. Snyder, Carl, *Business Cycles and Business Measurements*, p. 238.

II. PERSISTENT DEPRESSION, 1874-1879

The selected series of statistical data given in the accompanying tables indicate that the depression continued for about six years, reaching its end in the revival of 1879.[11]

[10] Manuscript in the files of the Institute of Economics.

[11] The chief evidence to the contrary is found in the data on railroad gross earnings and railway freight traffic, which seem to offer testimony to the occurrence of a revival in 1878. The significance of this evidence is discussed on page 245.

This conclusion is confirmed by the trade reviews. An editorial in the *Journal of Commerce* is typical of the reviews of 1874. "The condition and prospects of trade are subjects of universal concern. The promises of the earlier months of the year have not been kept, and the present outlook into the future gives but little relief. There is no panic; no financial crisis; no scarcity of money, food or clothing; no general sickness; no apprehension of war; no fear of rebellion. . . . Why then should there not be a bustle of activity on every side? Why are not our thoroughfares thronged with moving produce and merchandise, and our ships, canal boats, and railroad cars filled with outward and inward freights? . . . It is worse than idle to deceive ourselves. There is no widespread and substantial prosperity. We can find no class of manufacturers, merchants, agriculturalists, artisans, or common laborers, who are steadily earning a profit or have full and contented employment." [12]

In 1875, "a recuperation was looked for with confidence since the financial crisis of 1873 had been passed by more than a full year; but it failed to take place and it appears that the disastrous effects of the panic were underestimated. . . . . It had been anticipated that with the curtailment of production and a reduced volume of foreign imports, together with the exhaustion of the stocks of merchandise throughout the country, there would spring up a renewed demand for goods which would lead to a more healthy business at better prices. However correct these expectations may have been in theory, they were not realized in fact up to the close of 1875." [13] The table on page 242 indicates that commodity prices and the volume of merchandise imports were declining all through 1875.

[12] Quoted in *Bankers' Magazine,* September, 1874, p. 246.
[13] *Financial Review,* 1876, p. 1.

The year 1876 was pictured as one of "depression and disappointment."[14] The *Financial Review* laid considerable stress for the year's unfavorable showing on a railroad "war" of "unparalleled severity" which began in April

INDEXES OF ECONOMIC ACTIVITY, 1874–1880

Year	Merchandise Imports[a] (In millions of dollars)	Production Index[b]	Immigrants[c] (In thousands)	Number of Commercial Failures[d]	Wholesale Prices[e] (Index number)	Railroad Gross Earnings[f]		Railway Freight Traffic[g] (In billions of net ton miles)
						Total (In millions of dollars)	Per Mile (In dollars)	
1873...	595	35.26	423	5,183	124	526	7,948	20
1874...	562	34.01	261	5,830	124	520	7,513	20
1875...	503	36.41	191	7,740	117	503	7,010	21
1876...	427	38.31	157	9,092	101	497	6,764	23
1877...	480	40.72	131	8,822	95	473	6,380	23
1878...	432	41.03	153	10,478	84	490	6,207	28
1879...	513	44.77	251	6,658	85	526	6,653	35
1880...	696	45.75	594	4,735	94	614	7,471	38

[a] *Monthly Summary of Foreign Commerce.*

[b] Snyder, *Business Cycles and Business Measurements*, 1927, p. 239.

[c] From Iron and Steel Association, *Annual Statistical Report*, 1904, p. 117.

[d] *Statistical Abstract*, 1906, p. 689.

[e] Dun's Index Numbers: quoted in Mitchell, *Gold, Prices and Wages Under the Greenback Standard*, 1908, p. 60.

[f] *Statistical Abstract*, 1900, p. 379.

[g] Revenue and non-revenue freight carried on Class I railroads in the United States, Snyder, *Business Cycles and Business Measurements*, p. 238.

and continued until December 16.[15] The depression persisted throughout 1877. Both the Frickey and the Snyder index of bank clearings reflect a volume of business smaller than 1876 and a declining volume as the year progressed. Prices fell from month to month.

[14] *Commercial and Financial Chronicle*, January 6, 1877, p. 3.

[15] *Financial Review*, 1877, p. 1.

WHOLESALE PRICES AND MERCHANDISE IMPORTS, BY QUARTERS, 1874–1880

Year and Quarter	Index of Wholesale Prices (Usually for first month of quarter) [a]	Merchandise Imports (Total for quarter in millions of dollars) [b]
1874		
First	140	147
Second	141	154
Third	138	140
Fourth	138	121
1875		
First	138	140
Second	132	135
Third	129	123
Fourth	127	105
1876		
First	122	127
Second	122	104
Third	118	98
Fourth	117	98
1877		
First	121	121
Second	118	136
Third	114	115
Fourth	110	108
1878		
First	107	107
Second	105	107
Third	99	111
Fourth	102	107
1879		
First	100	111
Second	99	116
Third	98	128
Fourth	103	158
1880		
First	114	182
Second	116	199

[a] Mitchell, W. C., *Gold Prices and Wages Under the Greenback Standard*, 1908, p. 60.

[b] *Monthly Summary* of Bureau of Statistics, Treasury Department.

CLEARINGS INDEXES OF BUSINESS ACTIVITY, 1875–1879

Year and Month	Frickey's Index [a]	Snyder's Index [b]
1875		
January	113	....
February	111	....
March	120	101.1
April	119	100.8
May	118	100.9
June	114	101.6
July	114	98.0
August	109	95.3
September	104	87.9
October	99	88.0
November	107	94.0
December	109	95.1
1876		
January	112	99.9
February	112	96.8
March	113	102.4
April	105	101.0
May	107	102.0
June	101	102.3
July	98	99.2
August	99	100.6
September	92	92.9
October	92	94.4
November	90	93.9
December	92	99.1
1877		
January	98	104.0
February	95	101.1
March	89	95.2
April	91	89.4
May	89	91.7
June	81	92.2
July	86	94.6
August	88	89.4
September	89	92.6
October	85	94.1
November	81	95.1
December	78	93.5

CLEARINGS INDEXES OF BUSINESS ACTIVITY, 1875–1879 (Continued)

Year and Month	Frickey's Index [a]	Snyder's Index [b]
1878		
January	81	94.1
February	81	92.7
March	79	89.5
April	80	86.8
May	74	85.8
June	74	88.0
July	76	87.8
August	82	88.4
September	84	89.6
October	80	91.9
November	77	91.5
December	71	89.6
1879		
January	75	88.9
February	80	90.4
March	77	89.5
April	80	90.4
May	86	91.8
June	84	95.2
July	88	96.0
August	83	94.3
September	88	95.6
October	103	100.9
November	100	106.7
December	103	109.9

[a] *Review of Economic Statistics*, Vol. VII, 1925, p. 261.
[b] Snyder, Carl, *Business Cycles and Business Measurements*, p. 292.

The trade reports were all discouraging. The same lack of faith in the future which had been so characteristic of the immediately preceding years was still much in evidence. "Of what use are the copious supplies of loanable funds except the owners will lend them on such securities and to such borrowers as are offered in the market? So far, however, from there being this ready confidence and desire to lend, there is among the owners of capital a general desire to hold it under their immediate control. . . . A similar lack of confidence is manifested among good borrowers. The spirit of enterprise is weakened among the class of persons who employ capital and who keep up the

demand for it in the money market." [16] There was, however, a sharp advance in interest rates in the fall accompanying a bull market on the stock exchange, but business failed to respond, and the rates fell to a low point before the end of the year.

There is some evidence pointing to a revival in the second half of 1878. Snyder's clearings index touches bottom in May of that year and during the remaining months of 1878 ranges at somewhat higher levels. Railroad traffic and earnings made very substantial gains over the figures of the previous year.[17] There was undoubted improvement in the conditions existing in most agricultural sections of the country dating back to the huge and profitable crop of 1877. A contemporary review of the history of the drug trade took the position that the early fall of 1878 witnessed the beginnings of business recovery.[18]

On the other hand, Frickey's clearings index touched its lowest point in December, 1878, and pig iron production tended downward throughout the year. It is highly probable that the marked expansion in transportation activity was due mainly to the increased agricultural yield of 1877 and 1878. Had there been a revival of business generally it would surely have been reflected in the import figures

[16] *Bankers' Magazine,* April, 1877, p. 739.

[17] See table on p. 241.

[18] "The drug trade for the year 1878 has shared in the general improvement in commercial affairs . . . . the repeal of the bankrupt law in September, with the prospect of a successful resumption of specie payments in January, gave an impulse to business which steadily improved to the close of the year." New York Chamber of Commerce, *Annual Report,* 1878-79, Part II, p. 87. In the same article it was admitted that both jobbers and retailers were complaining of "strong competition and diminished profits." A year later, in his survey of 1879, this writer reiterated his belief that the repeal of the bankrupt law "renewed confidence," and then proceeded to explain that the increasing volume of merchandise imports was his chief basis for placing the beginning of the recovery prior to 1879. In fact, he stated that "the depression of 1873 had reached its limit before 1878." *Annual Report,* 1879-80, Part II, p. 73. A glance at the table on p. 241 will show, however, that the expansion of imports did not begin until 1879.

and in the production index. The former series, however, declined, and the latter makes a smaller gain in 1878 than in any year since 1874.[20]

Reports from individual trades and industries for the year 1878 were uniformly unfavorable, aside from the reports on the drug trade previously noted.[21] The *Financial*

[20] "In reviewing carefully the course of railroad business during the past two years the important point to keep in mind is the fact that in these two years the principal crops of the country have been of large volume, and not only has the actual transportation of the grain and other products caused heavy freights, but there has been an indirect influence in the stimulus given to business, causing return freights to the West, the increased settlement of Western lands. . . ." *Financial Review*, 1879, p. 54. But the "indirect influence in the stimulus given to business" seemed not to be very clearly perceived by those closest in touch with the railroads. An editorial, appearing in the *Railroad Gazette* in December, 1878, drew attention to the "tremendous" progress which had been made recently in agricultural production and then observed: "By this time, however, it begins to be suspected that there may be a great growth in farming industry with comparatively little stimulus to manufacture. . . . The slowness of trade or manufacturers to respond to the recent more rapid advance in farming, however, must be charged partly — probably this year very largely — to the low prices of farm products." December 27, 1878, p. 624. In spite of the record-breaking crops it appeared that the farmers received a smaller money income in 1878 than in 1879. *Statistical Abstract of the United States*, 1906, pp. 543-544.

[21] The *Annual Report*, issued by the New York Chamber of Commerce contained reviews of the previous year's activities in many lines of business. The following brief quotations are taken from Part II of the 1878-79 *Annual Report* and refer to developments in 1878.

(Tobacco) "We regret that our predictions twelve months since as to an improvement during the year have not been verified." p. 44.

(Wool) "It has probably been as disastrous a year as any ever known on this side of the water, in the absence of a commercial crisis." p. 55.

"Never has the cotton goods trade of the world passed through an experience similar to that of last year. . . . All through the year every authority has predicted a great scarcity, and some almost a cotton famine before the season is closed. That these anticipations have not been realized is now a matter of history — slow trade, short hours, idle spindles in almost every country of the world, being in brief the explanation." p. 71.

"The condition of the iron trade during 1878 was much the same as for the four years immediately preceding, and its history through the year almost a repetition of the year before, at a lower

Review accounted for the large sales of land "by the prevalent depression in mercantile business in cities and by the unusually large profits which had been derived from farming operations in 1877," but added that "the last quarter of the year showed a decided improvement in the tone prevalent in commercial and financial circles." [22] It also said: "At the close of the year there was upon the whole a fairer prospect for coming prosperity in commercial and financial affairs than there had been at the close of any year since the crisis of 1873." [23]

There is some evidence of business recovery very early in 1879. Attention has already been called to the facts that Frickey's clearings index touched bottom in December, 1878. The volume of merchandise imports also began to increase with the first quarter of 1879. On the other hand, there is testimony to the effect that business was still depressed during the early months of 1879. The clearings indexes show little tendency to rise until May or June, remaining, until that time, at lower levels than were characteristic of 1878. The index of pig iron production did not turn upward until the third quarter. Commodity prices continued falling also until late summer.

It was not till the late spring or early summer of 1879 that all of the indexes of business activity turned unmistakably upward. Reports from many trades and industries

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range of prices. Dullness and declining values were the marked features of the year scarcely relieved by any animation or firmness." p. 125.

Reports from the coffee trade [p. 31], sugar trade [p. 9], petroleum industry [p. 95], leather trade [p. 99], lumber industry [p. 110], and the dry goods trade [p. 87] were all unsatisfactory. Without exception they referred to the currently depressed condition of business and none of them made mention of improvement.

[22] 1879, p. 2. Improving sentiment was also noted by another writer, in reviewing the wine and liquor trade during 1878, which he declared to have been a year "of disappointment and regret." *Annual Report,* New York Chamber of Commerce, 1878-79, Part II, p. 116.

[23] ibid., p. 2.

support the conclusion that the business recovery may be dated from the middle months of 1879.[24] The *Financial Review* in describing the closing week of July and those of the following month said: "... the whole field of commercial and financial transactions was marked by a great rebound from former depression which will be remembered by the term applied in the forcible slang of the period, as the great 'boom' of the fall of 1879."[25] On June 13, the *Iron Age* said: "Business as a rule continued much depressed." The July, 1879, circular of Dun, Barlow and Co. noted: "The indications are numerous on every hand of an improved condition of business."[26] In reviewing the progress that had occurred in September, 1879, *Bradstreet's* said: "The month which has just passed will long be remembered in business circles as the harbinger of a new era of prosperity. The depression which has rested so heavily over the commercial community for the past six years has suddenly been dispelled. . . ."[27]

In an inquiry into certain aspects of retail and wholesale buying, now being made by the Institute of Economics, it has been found that the wholesale dry goods trade and the

[24] The *Annual Report* of the New York Chamber of Commerce, 1879-80, Part II, contained reviews of developments in different lines of business during 1879.

"This improvement did not reach the wool and woolen interests until May. . . ." p. 67.

"The condition of the trade [domestic dry goods] was much the same for the first quarter of the year as for the late months of 1878 .... in April the long looked for improvement began." p. 100.

(Pig iron) ". . . . no general change until May. . . ." p. 104.

For the most part the writers of these reports did not attempt to place the recovery in any particular part of 1879. The lumber industry, cotton industry, sugar and coffee trades, and the hide and leather trades all reported a pronounced recovery during the year. Reviews of the tobacco and petroleum industries were still unfavorable.

[25] 1880, p. 1. It added: ". . . . the history of commerce and finance presents few examples of a recovery so sharp, so decided, and of such extended influence as that which took place in the United States in the year just completed."

[26] Quoted in *Banker's Magazine,* August 8, 1879, p. 90.

[27] October 4, 1879, p. 4.

wholesale shoe trade were characterized by extreme caution all through 1878, aside from a mild increase in sales of dry goods in August and September. Merchandise moved rather freely only for a short period of six or eight weeks, after which the customary conservatism again manifested itself. There was an absence of a disposition on the part of the retailers to stock up in anticipation of future business.

The inquiry further shows that during the first two months of 1879, sales of dry goods to merchants were strictly for immediate needs. But beginning with March and April there were some evidences of forward buying. Business becomes very active in the fall and continued so into 1880. It is noteworthy that trade in this field began to pick up at a time when customarily there was a seasonal slump, and that the pronounced recovery in the fall of 1879, in contrast to the slight trade expansion of the year before, persisted into the new year. In the wholesale shoe trade, conservatism and an unwillingness on the part of retailers to buy merchandise, except for current requirements, continued until the latter part of August, and in such marked fashion that producers of raw materials complained that the practice had invaded the manufacturers' ranks as well. But late in August, 1879, the tone of the trade reports changed abruptly, and the reviews were all to the effect that merchants were stocking up for distant needs, that purchases of "full lines" were becoming common, and that dealers seemed disinclined to shoulder the risk of being without goods when called for, which was inherent in their former buying policy.

It is apparent from the confusing character of the data and the absence of agreement among observers that one cannot fix a precise date for the beginning of the revival. It is our best judgment that it did not occur in 1878. There was an undoubted improvement in business sentiment at that time, probably occasioned in large part by the imminence of a return to specie payments. The large crops

of 1877 and 1878 may have prepared the way for revival, but there is no evidence that there was much actual improvement in business. Beginning with the early spring of 1879 there does seem to have been a marked expansion of commercial and industrial activity. Merchandise imports, the two indexes of bank clearings, and the trade comment all point to an increase in the volume of transactions at that time, which grew in size and gained great momentum as the summer progressed.

III. HIGH PROSPERITY AND SLOW RECESSION, 1880-1886

There is no doubt as to the business situation during 1880 and the first part of 1881. Typical of the trade comment of 1880 was the annual survey in the *Financial Review,* which contained the following statements: "The year 1880 was one of those remarkable epochs when the progress of the country was not made in slow and measured paces, but the growth in material prosperity seemed to be marked by great strides forward, as if pushed by irresistible forces. In agriculture, manufactures, and internal commerce, the figures representing the year's business were unusual in the superlative degree—unmatched by any prior year in the history of the country." [28]

The trade reports indicate that the upward trend of business reached its peak in the summer of 1881. From this point the decline was so very gradual that its existence was not at first recognized. The annual *Financial Review* published early in 1882 noted no slackening of activity in 1881, but a year later the opinion had been reached the a ". . . . slackening of speed had begun in some respects in the last half of 1881; and from the first of July in that year . . . . there was a change in the spirit of ad-

[28] 1881, p. 1.

vance, and almost exaltation, which had taken possession of the business world since 1878." [29]

There was much other comment to the effect that a general slackening of business began in the midsummer of 1881, and there is corroborative evidence of these views in certain of the measures of business activity. For example, the clearings indexes move downward slightly in the last

INDEXES OF ECONOMIC ACTIVITY, 1879–1886

Year	Merchandise Imports [a] (In millions of dollars)	Immigrants [b] (In thousands)	Number of Commercial Failures [c]	Index of Prices of Basic Commodities [d]	Railroad Gross Earnings [e]		Railway Freight Traffic [f] (In billions of net ton miles)
					Total (In millions of dollars)	Per Mile (In dollars)	
1879...	513.6	251	6,658	82	526	6,653	34.6
1880...	696.8	594	4,735	98	614	7,471	38.4
1881...	670.2	720	5,582	103	702	7,548	42.6
1882...	752.8	730	6,738	111	764	7,283	43.0
1883...	687.1	570	9,184	100	817	7,405	44.1
1884...	629.3	461	10,968	93	771	6,663	44.7
1885...	587.9	332	10,637	82	765	6,185	49.2
1886...	663.4	393	9,834	80	822	6,570	52.8

[a] Snyder, *Business Cycles and Business Measurements*, p. 267.
[b] Iron and Steel Association, *Annual Statistical Report*, 1904, p. 117.
[c] *Statistical Abstract of the United States*, 1906, p. 689.
[d] Compiled by Federal Reserve Bank of New York, quoted in Snyder, *Business Cycles and Business Measurements*, p. 288.
[e] *Statistical Abstract*, 1900, p. 379.
[f] Snyder, *Business Cycles and Business Measurements*, p. 238.

half of the year. On the other hand, there was no appreciable fall either in pig iron production or in merchandise imports.

The trade reviews picture 1882 as a year during which the volume of business was at a maximum but profits were low.[30] In the last quarter of 1882, for the first time, every statistical measure recorded a decline.

[29] *ibid.*, 1883, p. 3.
[30] *ibid.*, 1883, p. 1.

Contemporary writers considered 1883 to be a year of recession. There was no panic nor even the threat of a financial crisis, but each month the reports were the same, business being described as sluggish, inactive, and unsatisfactory. The stock market declined throughout the year almost without interruption. In reviewing the year the *Chronicle* said: "The year 1883 . . . . bore all the characteristics of a recession from the preceding time of great buoyancy. In fact it was only when the tide thus continued to fall and fall, beyond all ordinary estimates, that the people began to realize and fully understand how high had been the booming wave of prosperity which culminated in 1881." [31]

Sharp breaks in the price of wheat had occurred in March and in April of 1884, and the depression in trade and industry continued very pronounced. Nevertheless the trade reports had it that the stock market panic of May was essentially a financial phenomenon. "In no sense could the trouble of 1884 be called a commercial crisis. On the contrary, the extreme tension of the year, with the strain on credit and the almost bottomless decline in prices, seemed to show most strikingly how firmly the mercantile community had established themselves since the troubles of 1873-1878." [32]

But whereas the stock market showed a tendency to rally quickly after May, commerce and industry became more and more quiet. In July, August, and September, frequent reference was made to the large number of failures in the mercantile business and to the numerous instances of mills which were closing. In November accounts of reductions in wages were added to the other signs of slackening activity. The holiday trade was unusually light. Sharp declines in the volume of bank clearings and of merchandise imports began in the late spring of 1884 and

[31] January 5, 1884, p. 7.
[32] *Financial Review*, 1885, p. 1.

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1880–1886 [a]

Year and Month	Pig Iron Production[b] (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1880					
January..	...	55	+ 7	101	106.9
February.	...	56	+ 9	102	106.7
March....	...	71	+11	104	106.1
April.....	...	74	+12	104	105.4
May.....	...	65	+10	99	103.6
June.....	...	60	+ 8	95	102.1
July.....	...	57	+ 7	97	100.3
August...	...	56	+ 7	96	100.4
September	...	53	+ 7	94	100.9
October...	...	54	+ 7	92	100.3
November	...	47	+ 9	109	103.3
December	...	47	+11	109	108.2
1881					
January..	...	45	+12	107	112.9
February.	...	48	+12	107	114.2
March....	...	61	+12	105	111.2
April.....	...	59	+12	105	110.2
May.....	...	55	+12	111	112.3
June.....	...	59	+13	127	120.3
July.....	...	52	+13	113	123.4
August...	...	62	+13	126	126.1
September	...	56	+12	126	124.2
October...	...	59	+12	124	123.9
November	...	57	+12	120	119.3
December	...	57	+11	123	116.3
1882					
January..	...	57	+11	115	113.3
February.	...	59	+11	113	110.4
March....	...	69	+12	110	105.6
April.....	...	66	+12	113	103.1
May.....	...	68	+10	111	102.8
June.....	...	63	+ 8	114	104.3
July.....	...	66	+ 5	115	105.6
August...	...	66	+ 7	115	105.9
September	...	63	+ 9	121	108.2
October...	...	61	+10	114	108.5
November	...	55	+10	120	109.5
December	...	59	+ 9	111	107.4

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1880–1886[a] (Continued)

Year and Month	Pig Iron Production[b] (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1883					
January..	...	57	+ 9	114	108.1
February.	...	56	+ 7	111	106.3
March....	...	61	+ 4	116	104.8
April.....	...	57	+ 2	106	101.3
May.....	...	56	+ 2	113	100.9
June.....	...	65	+ 1	122	101.3
July.....	...	57	+ 1	113	101.5
August...	...	59	+ 1	116	101.0
September	...	51	+ 2	111	99.2
October...	...	57	+ 2	113	99.7
November	...	57	— 2	106	98.1
December	...	54	— 6	106	102.9
1884					
January..	...	54	—10	108	100.4
February.	...	55	— 9	109	100.0
March....	...	61	— 8	102	91.9
April.....	...	54	— 8	108	92.7
May.....	...	56	— 7	111	94.5
June.....	...	52	— 6	92	93.6
July.....	...	55	— 6	95	90.2
August...	...	51	— 8	90	84.2
September	...	51	—10	90	83.6
October...	...	52	—12	89	83.5
November	...	45	—15	80	82.3
December	...	42	—18	88	83.5
1885					
January..	.27	42	—16 [c]	89	84.5
February.	.26	42	—19	85	84.8
March....	.30	53	—17	84	81.9
April.....	.29	49	—16	89	81.1
May.....	.29	46	—19	82	81.7
June.....	.27	49	—14	90	84.9
July.....	.28	49	—11	91	85.7
August...	.28	51	—15	85	86.1
September	.27	50	—14	88	85.7
October...	.29	54	—12	93	87.5
November	.31	51	—11	93	91.9
December	.35	52	— 9	97	95.6

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1880–1886 [a] (Continued)

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1886					
January..	.37	47	—10	88	95.7
February.	.34	57	— 8	94	95.7
March....	.41	60	— 6	100	95.2
April.....	.44	57	— 8	93	95.2
May.....	.48	53	— 7	89	94.5
June.....	.46	54	+ 3	99	96.1
July.....	.47	56	+ 4	102	99.4
August...	.46	59	+ 2	101	101.2
September	.44	55	+ 2	102	101.5
October...	.48	55	+ 1	99	100.7
November	.47	54	+ 2	104	102.5
December	.50	56	+ 3	107	104.0

[a] Pig iron production from Holbrook Working, *Journal of American Statistical Association*, Vol. XIX, 1924, pp. 381–386. Imports from *Monthly Summary of Foreign Commerce*. American Telephone and Telegraph Index of Business Activity from Hardy and Cox, *Forecasting Business Conditions*, p. 340. Other series from sources quoted on pp. 241, 244.

[b] No data available until 1885.

[c] Composition of index changes at this point.

continued throughout the balance of the year. Commodity prices likewise ranged lower and lower as the year came to a close.

Business revived in 1885, but the statistical evidence is again conflicting as to the date of the revival. The volume of merchandise imports increased steadily all through the year. Each of the clearings indexes registered its lowest point in the first quarter of the year, but neither of them moved upward strongly until October. Commodity prices began to rise in November and the output of pig iron in December.

There was disagreement among contemporary observers also. Through the first six months of the year trade was

uniformly described as "lacking in animation," and inactive. In August and September the jobbing trades were reported as showing more liveliness, but manufacturing was still dull. At the end of the year some of the writers were still referring to "the present depression" which was declared to include "the whole world extending throughout Europe and even to India and China." On the other hand, an editorial in the *Railroad Gazette* of December 25, 1885, said: "The year closes with a very decided change in the popular feeling, and considerable change for the better in trade and manufactures. The improvement in confidence is doubtless greater than the improvement in business, but it is probably more important also. . . . . Thus, while there seems no reason to expect a 'boom' like that in 1880, a continuation of the improvement of business which began three months ago seems reasonably to be expected." We conclude from the business indexes and from the trade comment that the business revival had its beginning in the autumn of 1885.

The first five months of 1886 were marked by serious labor troubles, business inactivity, low prices of merchandise, and depression on the stock exchange, yet the volume of operations was much in excess of that of the previous year. A marked change in the business situation occurred in the late spring. In June most of the labor troubles came to an end. In the following month there came cheering news of larger railroad earnings and favorable crop reports. Through the fall months the trade reports continued to be encouraging, and by the end of the year the volume of trade and of industrial output was again at high levels.[35]

[33] Our conclusions in regard to the years from 1880 to 1886 are in substantial agreement with the findings of Dr. W. L. Thorp, *Business Annals*, pp. 133-135. Dr. D. R. Dewey refers to the improvement of business in the fall of 1885 as "a partial recovery" and calls attention to the "unusual outbreaks of strikes, boycotts, lockouts, and labor disturbances, in 1886-1887." *Financial History of the United States*, 8th ed., 1922, p. 410.

IV. EXPANDING ACTIVITY, 1887-1893

The annual statistical series, appearing on page 258, as well as the monthly series shown on page 259, reveal a long period of mild prosperity following the recovery of 1885-1886. Until the panic year, 1893, they give no evidence of any serious interruption to the generally increasing volume of operations. They do, however, suggest that the progress of trade and industry was somewhat unsteady, and that there was an absence of that buoyancy of sentiment that was so characteristic of the early eighties. The flow of immigration was irregular, prices tended downward, and the index of production displayed a very choppy, upward movement. But the volume of business was rising steadily, as the yearly totals of freight traffic so clearly show. Even the upheaval of the panic year itself was not sufficient to retard the advance in this series. The different sets of annual data do not vary at all uniformly and fail to indicate clearly the years in which business conditions were relatively good or relatively bad, and the extent of the changes which did occur.

The trade reviews indicate that the early weeks of 1887 witnessed dull and hesitating markets. By April there began to be a better tone in the trade reports, but no real prosperity developed. The volume of bank clearings reached high levels in the early spring; then fell off. Business was generally said to lack buoyancy. The index of pig iron production tells a different story, and the great activity that prevailed in the iron and steel industry occasioned a good deal of favorable comment. The satisfactory conditions in that field were of course linked up with the large railroad projects under way. Surveying the year as a whole the *Financial Review* said: "One would call the year . . . . a pretty good one from an industrial point of view. During the first half of it prices of all commodities were well sustained, the quantity of goods marketed being immense, while during the last half production did not

decrease, although in many departments prices gradually grew less satisfactory." [34]

The trade reports failed to show that any business changes of an outstanding nature occurred in 1888. On the whole it was represented as being much like 1887, with possibly some betterment. The measures of business activity which are available indicate that the decline which had set in during the previous summer persisted through

INDEXES OF ECONOMIC ACTIVITY, 1886–1893 [a]

Year	Merchandise Imports (In millions of dollars)	Immigrants (In thousands)	Number of Commercial Failures	Index of Prices	Railroad Gross Earnings		Railway Freight Traffic (In billions of net ton miles)
					Total (In millions of dollars)	Per Mile (In dollars)	
1886...	663.4	393	9,834	80	822	6,570	53
1887...	708.8	517	9,634	81	931	6,799	62
1888...	725.4	525	10,679	87	951	6,540	65
1889...	770.5	432	10,882	80	992	6,445	69
1890...	823.4	495	10,907	82	1,086	6,874	79
1891...	828.3	595	12,273	79	1,125	6,850	81
1892...	840.9	547	10,344	76	1,169	6,852	84
1893...	776.2	495	15,242	76	1,207	6,968	91

[a] Wholesale prices for 1886–1889 are prices of basic commodities compiled by the Federal Reserve Bank of New York; from 1890, averages of quarterly wholesale commodity index of the U. S. Department of Labor; Snyder, p. 288. Railway freight traffic from *Statistical Abstract of the United States*, 1906, p. 583. Other data from sources quoted on p. 251.

the early months of 1888. Clearings tended downward, as did also the volume of merchandise imports.[35] Undoubtedly the country's business underwent a mild recession in the spring of 1888. But in July, and later, trade received considerable stimulus from favorable crop reports for this country while Europe was threatened with a short wheat crop. As events turned out, the output of wheat in the United States fell off considerably also, the results being

[34] 1888, p. 6.

[35] Tables are given on page 259.

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1887–1893 [a]

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1887					
January..	.52	52	— 2	98	103.3
February.	.49	59	+ 3	100	101.2
March....	.55	63	+ 9	112	101.2
April.....	.54	64	+ 8	107	104.3
May.....	.48	59	+ 8	105	108.3
June.....	.40	61	+ 6	119	111.5
July.....	.44	57	— 2	108	110.1
August...	.49	66	+ 2	107	108.2
September	.53	56	+ 7	106	104.6
October...	.58	61	+ 5	101	103.8
November	.55	60	+ 7	109	104.0
December	.55	52	+ 1	105	101.8
1888					
January..	.50	58	— 2	99	100.0
February.	.41	67	— 2	103	98.2
March....	.44	63	— 7	97	95.7
April.....	.44	61	— 6	100	95.9
May.....	.48	60	— 2	104	97.3
June.....	.45	63	— 2	106	100.4
July.....	.46	59	— 3	104	101.4
August...	.50	58	+ 2	108	101.1
September	.50	54	+ 2	104	101.0
October...	.55	66	+ 8	113	104.2
November	.56	54	+ 2	103	103.4
December	.62	61	+ 3	106	104.4
1889					
January..	.62	68	+ 6	107	103.2
February.	.55	62	+ 5	106	104.7
March....	.61	66	+ 3	106	104.0
April.....	.58	66	+ 1	105	103.0
May.....	.58	69	+ 4	109	104.8
June.....	.55	61	+ 2	107	105.9
July.....	.58	72	+ 7	111	108.9
August...	.58	65	+ 6	111	107.7
September	.58	54	+ 1	107	107.3
October...	.65	69	+ 8	113	107.5
November	.66	59	+ 7	111	108.1
December	.70	60	+ 5	108	109.2

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1887–1893 [a] (Continued)

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1890					
January..	.72	63	+11	111	109.4
February.	.66	63	+ 8	108	109.3
March....	.74	67	+10	112	109.1
April.....	.72	72	+12	117	109.7
May.....	.74	70	+17	121	115.7
June.....	.71	75	+15	115	119.4
July.....	.70	78	+16	122	121.1
August...	.69	61	+12	116	118.1
September	.69	76	+15	121	118.0
October...	.73	73	+17	121	117.7
November	.72	54	+ 8	115	116.0
December	.72	61	+ 5	108	112.7
1891					
January..	.64	62	+ 5	108	108.8
February.	.52	66	+ 1	106	105.9
March....	.50	78	— 5	104	102.9
April.....	.45	81	— 6	108	103.1
May.....	.54	72	— 7	107	104.2
June.....	.63	73	0	107	106.3
July.....	.71	67	+ 8	110	106.6
August...	.70	66	+ 7	108	110.9
September	.70	61	+13	116	115.3
October...	.76	67	+12	113	116.6
November	.76	65	+ 7	110	112.4
December	.79	69	+ 7	112	109.9
1892					
January..	.78	63	+ 9 [b]	111	108.7
February.	.74	65	+14	124	112.5
March....	.79	87	+11	117	111.9
April.....	.74	76	+ 9	112	112.1
May.....	.73	69	+ 7	111	109.9
June.....	.68	72	+ 9	120	113.4
July.....	.68	66	+ 6	115	114.7
August...	.64	71	+ 6	118	116.5
September	.62	67	+ 7	118	115.9
October...	.69	72	+ 8	117	116.6
November	.70	68	+10	119	116.7
December	.73	65	+12	119	117.7

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1887–1893 [a] (Continued)

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1893					
January..	.73	75	+12	120	118.2
February.	.66	73	+12	116	117.3
March....	.75	87	+12	112	113.7
April.....	.74	77	+11	111	111.6
May.....	.75	76	+11	113	111.7
June.....	.67	70	+ 5	101	108.9
July.....	.55	63	— 2	93	102.2
August...	.40	59	—13	83	89.5
September	.31	46	—17	87	82.6
October...	.32	52	—17	84	80.0
November	.36	49	—16	89	83.2
December	.42	50	—15	86	85.7

[a] Sources same as for table on pp. 254, 255.
[b] Composition of index changes at this point.

high prices throughout the latter part of the year. But the initial impetus was not lost. Industrial and commercial activity in practically all lines continued to gather momentum through the fall and early winter. The *Financial Review* characterized the year as a whole as one "of fair business prosperity throughout the country. . . . ." [36]

Prosperity was more pronounced in 1889 than it had been at any time since 1881. This is shown both by the statistical measures of business activity and by the comments appearing in the trade reviews. The *Financial Review* declared that "in the general volume of trade movements" the year had surpassed all of its predecessors. "In the business of the country at large, in agriculture, manufacturing, and general trade, there was great activity and usually plenty of work, good wages, and fair profits to the capitalists." [37] The continued active demand for iron, at rising

[36] 1889, p. 1.
[37] *Financial Review,* 1890, p. 1.

prices, occasioned a great deal of wonder since railroad construction was still declining in volume. The records of 1888 and 1889 indicate that iron and steel products were finding a broadening market. It was undoubtedly true, however, that the great turnover of goods which occurred in nearly all lines was marked by very sharp competition and small profits. The falling level of wholesale prices testifies to this.

"The general business of the country during the first three-quarters of the year was beyond the similar period in all former years, but with the money pinch in the autumn and the financial disturbances, credits were greatly curtailed, new work was stopped in all directions and business necessarily declined." [38] This description of the year finds ample confirmation in all the statistical measures of business conditions. The upward movement which had had its inception in the summer of 1888 reached its peak in the fall of 1890. An extraordinary pressure in the money markets appeared as early as August and culminated in a panic on the stock exchange in November. Several factors contributed to this situation. Chief among them were the withdrawal of large blocks of English capital consequent on the collapse of the boom in Argentina [39] and the passage of the Silver Purchase Act in July,[40] and the exhaustion of the surplus in the United States Treasury.[41] As nearly as may be determined, trade and industry continued to be very active right up to the time of the collapse of security prices.

The new year opened with business greatly depressed, a natural aftermath of the disturbed conditions of the preceding quarter. Mild depression continued through the first seven months of the year. Activity in some industries

[38] *Financial Review*, 1891, p. 1.
[39] Noyes, A. D., *Forty Years of American Finance*, 1898, p. 158.
[40] Conant, Charles A., *A History of Modern Banks of Issue*, 1896, p. 557.
[41] *ibid.*, p. 523.

fell to extraordinarily low levels, as for example, in iron and steel. But "from the first of August there was a radical change in sentiment. . . . ." This was due almost entirely to the prospects of poor cereal crops abroad and excellent cereal crops in this country.[42] In spite of this improvement in business sentiment there was no immediate extraordinary improvement in business itself. The failure of the manufacturing and mercantile interests to experience expected benefits from the great crops of 1891 was explained on the grounds that "money was not yet distributed from the sale of grain in the West, and the whole South, as well as the cotton interests, were suffering during the fall under the steadily declining prices of cotton."[43] The year-end reviews pictured business as having made "moderate" progress since the monetary crisis of 1890. We conclude that the last five months of 1891 witnessed a recovery from the mild depression prevailing earlier.

The trade reviews pictured the first half of 1892 as a time of great prosperity, but their comments on the developments of the last half of the year are less favorable. While the various statistical series confirm the impression of prosperity in the first part of the year, they do not reflect any great falling off in activity after July. An exception should perhaps be made in the case of the index of pig iron production, but even here the trend was upward in the latter months of 1892.

The year-end reviews of 1892 were somewhat mixed. On December 31, R. G. Dun and Company's weekly *Review of Trade* said: "The most prosperous year ever known in business closes today with strongly favorable indications for the future." Similar conclusions were expressed in the report of the Chicago Board of Trade.[44] The *Financial Review*

[42] *Financial Review*, 1892, p. 1. The circumstances are well described by Mr. A. D. Noyes, in *Forty Years of American Finance*, p. 163.

[43] *Financial Review*, 1892, p. 1.

[44] *Annual Report*, 1893, p. XIII.

was more cautious. While conceding that 1892 was a far more prosperous year than either 1890 or 1891 it noted ". . . . almost everywhere an absence of buoyancy and an entire unwillingness to invest in undertakings at all venturesome. Stated in brief, we have apparently been in the midst of prosperous conditions and yet as a people without achieving prosperity. Our last taste of full industrial success was in 1879 to 1882." [45]

Both indexes of bank clearings give evidence of a slight recessive movement in 1893, beginning as early as February, which became precipitate after May. The index of pig iron production and the American Telephone and Telegraph Company's index, however, register no appreciable decline until June. Merchandise imports continued at very high levels during the first five months of the year, and wholesale prices likewise remained high throughout the first half of the year. In cyclical terms it seems most nearly accurate to designate the first quarter of 1893 as the last portion of the prosperity phase which had set in a year earlier.

Beginning with June there occurred an extraordinarily rapid diminution in the volume of trade and manufacturing, and by August conditions approached stagnation.[46] Pronounced depression continued through the remaining months of 1893.

V. DEPRESSION AND REVIVAL, 1894-1897

In 1894 depression was acute. The various series of annual data without exception testify to this, and the business indexes appearing on page 266 bear witness similarly to a condition of low output and stagnant trade. Contemporary comment was uniformly pessimistic.

[45] 1893, pp. 15-16.

[46] Financial distress had become acute in May, 1893, and the strain lasted for a period of six months. Stevens, A. C., "Analysis of the Phenomena of the Panic in the United States in 1893," *Quarterly Journal of Economics*, January, 1894.

A number of strikes intensified the depression during the first half of the year. During the summer and fall the agricultural situation added further to the intensity of the depression. Because of a scorching drought the corn crop fell from 548,000,000 bushels in 1893 to 137,000,000 bushels in 1894, and the wheat crop, although fair in size, met severe competition in foreign markets. The result was that "wheat sold on the farm in 1894 at an average price only a trifle over 49 cents a bushel; by far the lowest figure ever touched before or since." [47] In the fall European in-

INDEXES OF ECONOMIC ACTIVITY, 1893–1898 [a]

Year	Merchandise Imports (In millions of dollars)	Immigrants (In thousands)	Number of Commercial Failures	Bureau of Labor Statistics Index of Prices	Railroad Gross Earnings		Railway Freight Traffic (In billions of net ton miles)
					Total (In millions of dollars)	Per Mile (In dollars)	
1893...	776.2	495	15,242	76	1,207	6,968	91
1894...	676.3	250	13,885	70	1,067	6,056	82
1895...	801.7	324	13,197	69	1,092	6,099	89
1896...	681.6	301	15,088	66	1,126	6,222	94
1897...	742.6	222	13,351	66	1,133	6,228	98
1898...	635.0	255	12,186	67	1,250	6,772	115

[a] Sources same as for table on p. 259.

vestors, who a short time before had bought heavily of American securities at the low panic prices, began to unload them on our markets in order to gain a quick profit.[48] Large exports of gold added greatly to the uneasiness. Finally, the unfortunate state of the national finance and uncertainty regarding the new tariff act made the whole situation immensely more difficult. The *Commercial and Financial Chronicle* in its year-end review said: "Prostration became deeper as the year advanced." [49]

[47] Noyes, A. D., *Forty Years of American Finance*, p. 222.
[48] Van Metre, T. W., *Economic History of the United States*, p. 496.
[49] January 5, 1895, p. 9.

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1894–1897 [a]

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1894					
January..	.42	52	—14	88	88.0
February.	.40	49	—16	84	86.4
March....	.50	66	—14	86	85.1
April.....	.49	60	—14	88	84.1
May.....	.36	57	—14	88	87.4
June.....	.30	52	—20	86	88.7
July.....	.43	65	—18	84	88.1
August...	.57	52	—10	94	88.1
September	.62	51	— 7	89	88.2
October...	.67	60	— 7	90	90.4
November	.69	51	— 6	90	89.9
December	.73	62	— 4	89	90.9
1895					
January..	.71	67	— 3	91	91.0
February.	.62	58	— 9	85	88.2
March....	.68	69	—10	87	86.0
April.....	.65	69	—11	89	85.7
May.....	.67	66	— 8	94	90.9
June.....	.68	62	— 6	92	94.0
July.....	.76	73	— 1	97	96.4
August...	.81	71	0	94	95.0
September	.83	65	+ 1	90	94.0
October...	.90	75	+ 6	98	94.5
November	.91	63	+ 4	96	95.0
December	.92	62	+ 3	93	96.5
1896					
January..	.87	69	— 1	89	93.7
February.	.78	62	— 2	89	91.8
March....	.81	66	— 7	84	87.8
April.....	.79	59	— 5	86	87.0
May.....	.80	57	— 8	84	86.7
June.....	.75	56	— 8	86	88.8
July.....	.72	52	— 8	86	88.5
August...	.61	49	—14	79	85.3
September	.49	51	—16	78	82.3
October...	.50	50	—17	77	80.6
November	.55	50	—16	79	81.9
December	.65	59	—13	80	84.2

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1894–1897 [a] (Continued)

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1897					
January..	.69	51	—13	74	83.2
February.	.65	59	—11	78	82.3
March....	.73	76	—12	75	79.6
April.....	.72	101	—12	75	80.3
May.....	.73	79	—15	71	80.9
June.....	'70	85	—13	75	83.5
July.....	.71	54	—14	80	85.6
August...	.76	40	—10	87	88.2
September	.80	42	— 3	91	91.9
October...	.89	50	— 4	83	92.6
November	.92	52	— 4	86	93.5
December	.98	51	— 2	87	92.7

[a] Sources same as for table on pp. 254, 255.

The measures of business activity show that there was a slight wave of improvement during the latter part of the year, but it fell far short of the proportions of a recovery. This movement reached its "crest" in January, 1895. Prices showed no tendency to rise and the business situation continued to be "involved in great gloom." Gold was withdrawn from the Treasury in enormous amounts both for export and for domestic account. The reserve, which had been replenished only in the previous November, was reduced to a lower point than ever, and again the Treasury had to face the possibility of a suspension of gold payments.

In the early days of February, 1895, the government entered into the famous contract with the Morgan-Belmont Syndicate, the primary purpose of which was to prevent the exportation of gold. The flow of gold out of the country was halted temporarily and so was the stream of gold withdrawals from the Treasury. Almost at once the aspect of things was changed. Each of the indexes of business

activity turns upward in May. Further proof of the improvement in market conditions is found in the frequent instances of wage increases. "Notices of such advances were a daily occurrence after the close of March."[50] The growth in business activity which occurred in the summer and fall is clearly shown in the increasing volume of bank clearings and in each of the other indexes. Furthermore, there was an advance in prices in the fall and a great increase in imports during the third quarter.

But the upward movement was of short duration, and was not impressive in extent. The syndicate's plan of preventing the exportation of gold broke down. Gold began to flow out as early as July, and in August the loss reached a total of $15,000,000. There was a large foreign selling of American securities, gold exports further increased, and in November commodity prices declined. In December, President Cleveland's message regarding the boundary dispute between England and Venezuela brought on a violent panic on the stock market. The effects spread through business generally, and the year closed in gloom.

The danger of a war with England disappeared before the end of January, 1896, but in the following month the United States Senate passed resolutions recognizing the Cubans as belligerents, and the Venezuelan "war scare" was replaced by a threat of trouble with Spain. In March there occurred an extraordinary number of mercantile failures and "the industrial markets were in a state of profound discouragement."

The troubles of the year, however, were largely political in their nature. The ability of the "silver men" to capture democratic state conventions during the late spring, plus Bryan's nomination in July, threw business men into a state of deep concern. Trade and industry remained exceedingly quiet, and apparently fearful, until after the election. How fearful and how quiet are well indicated by

[50] *Financial Review,* 1896, p. 1.

the extremely low levels to which the indexes of business activity sank in October, in most cases finding the bottom deeper than that of two years before.

After the election there was a brief burst of activity. "During November fully 700 manufacturing establishments resumed work or added to their working force. This was taken as reflecting reassurance in the business community over the election verdict on the currency. But the rush of activity ceased, in a month or two, as suddenly as it had begun." [51] "The great industrial and business revival which the Republicans had promised and which their newspapers advertised failed to materialize." [52] The *Financial Review* said: "The year 1896 was not a prosperous one. It was a twelve-month of great anxiety and trial, marked by intense and growing business depression and by disturbing incidents which came in almost endless succession up to the very close of the year." [53] The new year opened with business sentiment at lower ebb even than it had been twelve months earlier, because of disappointment over the collapse of the budding revival which had followed the election.

But the long-awaited major upswing was not far away. Statistical indexes and trade comment for the most part testify to a marked improvement in the early summer which gradually developed into great prosperity. Snyder's index touched bottom in March, 1897, and Frickey's index two months later, and both tended rapidly upward for the remainder of the year. The index of pig iron production and the general index of business of the American Telephone and Telegraph Company picture business as being at a little lower ebb in the early fall of 1896 than they were at any time in 1897.[54]

[51] Noyes, A. D., *Forty Years of American Finance*, p. 267.
[52] Mitchell, W. C., *Business Cycles*, p. 59.
[53] 1897, p. 1.
[54] See pages 266-267.

But this early turn appears to be due to conditions peculiar to the iron and steel industry,[55] rather than to a genuine upturn from the depression level in 1896. The abnormal dullness of the steel industry just before the Presidential election in that year was due not only to the political campaign itself but also to a struggle between the railroads and the steel rail pool. Moreover, the producers of iron and steel, a large portion of whose output necessarily went into new construction, felt the pressure to an extraordinary degree because practically all expansion programs had come to a halt. And there is some reason to believe that certain employers were not averse to permitting the volume of unemployment to become larger in September and October as a warning to the labor group to vote "right." Having heavy stocks of material on hand, the plants producing pig iron could cut production below sales without great inconvenience.[56]

Viewing the evidence offered by the four indexes as a group, our conclusion is that the revival of the fall of 1896 was premature, and that business generally entered the recovery stage in the early summer of 1897. The movement of wholesale prices in 1897 was in approximate agreement with this conclusion, although as usual the curve lagged in starting its climb upward.[57] Contemporary opinion was

[55] The A. T. and T. Index of Business is heavily weighted with data on pig iron production during these years.

[56] Even though this industry were representative of business conditions as a whole, its own record does not point clearly to a revival in the last quarter of 1896. Measures were adopted here as elsewhere, after the election, to give a semblance of greatly expanded activity, but the results were not convincing. And even with this novel incentive supplemented by the impetus received from the collapse of the rail pool in February, 1897, the iron and steel industry's output decreased during the spring months and ran below the level of the corresponding months of 1896 clear up to midsummer.

[57] The record of imports, on the contrary, points to a great increase in the volume of trade in the first half of 1897 and acute

inclined also to this view. During the spring, domestic trade was hindered by the great expansion of imports which occurred immediately after the passage of the Dingley tariff bill in March and prior to its becoming a law in July. A better feeling pervaded the commercial markets beginning with June. In that month Secretary Gage delivered a speech definitely promising currency reform, and during the same period there occurred a marked improvement in the crop situation. In August a "boom" occurred on the stock exchange, which was attributed to the promising agricultural prospects.[58] It was becoming evident that the highly profitable experiences of 1879 and 1891 were to be repeated. "It was the bounty of nature, the United States being given plenty while other parts of the world were left with an insufficiency, that put the country on the road to prosperity."[59]

VI. ABOUNDING PROSPERITY, 1898-1903

Concerning the years from 1898 to 1902 it seems unnecessary to add anything to what is said in Chapter VIII (pages 000-000). The tables on pages 000 and 000 bear sufficient witness to the abounding prosperity of those years. With reference to the downswing of 1903, some quotations from the trade and financial journals may be of interest as indicating the time of the reversal of the business trend.

The *Financial Review* in its monthly summaries of current happenings indicates that industry did not begin to feel the recession till the early fall, but finance was affected earlier in the year. It reported as early as March that

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depression in the last six months. The movement of this usually good barometer of business conditions in a direction contrary to the course of current developments was caused, of course, by the new tariff schedules.

[58] Mitchell, *Business Cycles*, p. 180.

[59] *Financial Review*, 1898, p. 1.

"very gloomy views prevailed" on the stock exchange.[60] In July there occurred the first failures of stock exchange houses, with others following in August.[61] For all of this period there was continued and emphatic reference to the havoc being wrought by strikes, but it was not until the September summary that there appeared a reference to declining business activity: "Developments were not favorable during September, and industrial affairs began to wear a decidedly less assuring aspect"; [62] and in October, "developments continued mostly unfavorable." [63]

INDEXES OF ECONOMIC ACTIVITY, 1897–1903 [a]

Year	Merchandise Imports (In millions of dollars)	Immigrants (In thousands)	Number of Commercial Failures	Index of Prices	Railroad Gross Earnings		Railway Freight Traffic (In billions of net ton miles)
					Total (In millions of dollars)	Per Mile (In dollars)	
1897...	742.6	222	13,351	66	1,133	6,228	98
1898...	635.0	255	12,186	67	1,250	6,771	115
1899...	799.0	361	9,337	75	1,336	7,161	127
1900...	829.1	472	10,774	82	1,502	7,826	141
1901...	880.4	523	11,002	80	1,612	8,270	149
1902...	969.3	739	11,615	84	1,721	8,696	157
1903...	995.5	937	12,069	84	1,909	9,301	171

[a] Sources same as for table on p. 259. Wholesale prices from 1900 on are averages of monthly data.

Both of the clearings indexes move downward decidedly after July, as does the American Telephone and Telegraph Company's series. Pig iron production declined sharply in the latter part of the year, after reaching a peak in May. Commodity prices began to work downward early in the year, but it was not until the final quarter of 1903 that merchandise imports fell below the corresponding quarterly totals of the year before.

[60] 1904, p. 17.
[61] *ibid.*, pp. 20, 21.
[62] *ibid.*, p. 21.
[63] *ibid.*, p. 22.

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1898–1903 [a]

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1898					
January..	.98	51	— 3	85	93.3
February.	.90	53	— 2	91	94.2
March....	1.01	62	— 3	86	93.1
April.....	.98	56	— 7	82	91.8
May.....	.99	54	— 7	83	91.0
June.....	.92	51	— 4	88	92.2
July.....	.91	51	— 8	79	91.2
August...	.90	50	— 5	86	91.6
September	.89	48	— 5	86	90.4
October...	.96	52	— 7	81	91.9
November	.97	52	— 4	87	92.7
December	1.04	55	— 2	95	96.1
1899					
January..	1.04	58	+ 1	98	100.4
February.	.91	60	+ 1	103	103.4
March....	1.03	73	+ 4	110	104.9
April.....	1.04	65	— 1	100	105.2
May.....	1.09	70	+ 2	99	106.4
June.....	1.08	62	+ 3	98	116.6
July.....	1.15	60	+ 3	95	106.5
August...	1.16	67	+ 6	99	105.8
September	1.14	71	+ 8	101	105.6
October...	1.22	72	+ 9	100	105.9
November	1.22	70	+ 8	99	105.1
December	1.28	71	+11	99	104.5
1900					
January..	1.28	76	+10	97	103.1
February.	1.15	69	+11	94	101.3
March....	1.26	86	+10	97	99.0
April.....	1.22	75	+ 8	94	98.3
May.....	1.28	72	+ 6	94	99.5
June.....	1.21	61	+ 6	96	100.7
July.....	1.13	64	+ 3	93	100.1
August...	1.02	62	0	94	98.2
September	.94	60	— 3	89	95.3
October...	.93	71	— 3	92	95.6
November	.92	65	— 4	95	97.1
December	1.03	69	— 4	94	100.3

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1898–1903 [a] (Continued)

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings	
				Frickey's Index	Snyder's Index
1901					
January..	1.15	69	— 1	99	103.5
February.	1.13	64	0	98	104.3
March....	1.27	76	+ 2	100	104.6
April.....	1.25	77	+ 5	107	106.8
May.....	1.33	79	+ 4	108	112.5
June.....	1.31	68	+ 3	105	115.3
July.....	1.33	73	+ 4	104	112.6
August...	1.31	73	+ 4	104	109.2
September	1.27	67	0	99	106.6
Octover...	1.36	81	+ 3	103	107.5
November	1.35	73	+ 2	104	106.4
December	1.35	80	+ 1	100	107.3
1902					
January..	1.36	79	+ 2	106	108.5
February.	1.28	68	+ 2	100	108.1
March ...	1.43	84	+ 2	102	107.3
April.....	1.43	76	+ 5	107	107.4
May.....	1.50	76	+ 5	104	109.7
June.....	1.45	73	+ 2	95	109.7
July.....	1.49	79	+ 4	108	109.2
August...	1.45	79	+ 3	102	106.1
September	1.42	88	+ 6	108	108.0
October...	1.48	87	+ 5	105	106.8
November	1.43	85	+ 2	100	106.2
December	1.51	94	+ 3	102	104.9
1903					
January..	1.47	85	+ 3 [b]	104	105.1
February.	1.39	83	+ 1	102	106.0
March....	1.59	96	+ 2	102	105.2
April.....	1.61	88	+ 4	104	104.7
May.....	1.71	79	+ 3	103	105·0
June.....	1.67	82	+ 2	107	107.8
July.....	1.55	82	+ 3	108	109.7
August...	1.57	82	— 1	98	109.0
September	1.55	82	— 2	100	107.1
October...	1.42	82	— 6	100	104.6
November	1.04	77	—11	91	102.7
December	.85	72	—14	93	101.9

[a] Sources same as for table on p. 255, except that pig iron data from 1903 are from *Iron Age*, as reprinted in Hardy and Cox, *Business Forecasting*, p. 318.
[b] Composition of index changes at this point.

VII. PROSPERITY AND PANIC, 1904-1907

There were many adverse developments in 1904 which helped to deepen the business depression that prevailed at the opening of the new year. Among them may be mentioned the extremely severe weather, the Russo-Japanese War which began in February, and the Baltimore fire, which involved a property loss of $100,000,000.[64] All of the indexes reflect the slackened rate of business activity which characterized the period.

A strong recovery movement commenced in the fall. As a result of sharp cuts in the prices of steel and steel products, made in August and September, consumption was stimulated and "a greatly improved tone developed in the trade." In September, the Pennsylvania Railroad placed some thousands of men back on full working time. In October, "evidences of a genuine and very pronounced revival of activity were visible on every side." [65]

The clearings indexes suggest that the revival may have occurred somewhat earlier. Frickey's index touched bottom in May, and Snyder's reached its lowest point in July. But in neither of these series do the index numbers equal those of corresponding months of 1903 until November. The volume of pig iron production began a slow rise in July. On the other hand, the aggregate of merchandise imports was smaller in July than in any month since February, 1902.[66] The Harvard Index of trade does not start upward until August, the American Telephone and Telegraph Company's index not until September, and wholesale prices continued at the bottom level until December. The weight of the evidence points to the early autumn as the time when the revival began.[67] The entire period of the depression had

[64] *Financial Review,* 1905, p. 1.
[65] *Financial Review,* 1904, pp. 21-22.
[66] Hardy and Cox, *Forecasting Business Conditions,* p. 339.
[67] Mitchell places the beginning of the revival in September, *Business Cycles,* p. 68; and Hansen "toward the end of the year," *Cycles of Prosperity and Depression,* p. 10.

covered hardly 14 months, during much of which business activity was only moderately curtailed.

The great prosperity of 1905 and 1906 needs no comment. But the continued expansion of business activity in time imposed a strain on the country's monetary resources, and the opening weeks of 1907 found the speculative markets in a pessimistic frame of mind which grew more pronounced as time passed. On March 14 there occurred a spectacular fall in security prices.[68] The first notable episode

INDEXES OF ECONOMIC ACTIVITY, 1903–1908 [a]

Year	Merchandise Imports (In millions of dollars)	Immigrants (In thousands)	Number of Commercial Failures	Railroad Gross Earnings		Railway Freight Traffic (In billions of net ton miles)
				Total (In millions of dollars)	Per Mile (In dollars)	
1903.....	995.5	937	12,069	1,909	9,301	171
1904.....	1,035.9	808	12,199	1,978	9,248	173
1905.....	1,179.1	1,056	11,520	2,112	9,643	187
1906.....	1,320.5	1,215	10,682	2,347	10,631	217
1907.....	1,423.2	1,334	11,725	2,603	11,556	233
1908.....	1,116.4	410	15,690	2,407	10,544	216

[a] Immigration data for 1901–1906 taken from *Annual Statistical Report*, American Iron and Steel Association, 1907, p. 76; 1907–1908, *ibid.*, 1913, p. 144. Commercial failures are from *Statistical Abstract of the United States*, 1924, p. 294; railroad data from *Poor's Manual;* other data from sources cited in previous tables in this appendix.

that drew the attention of the general public to the extreme tension in the credit situation was the closing of the doors of the Knickerbocker Trust Company on October 22. Runs were precipitated immediately on other banks, and the panic soon became nation-wide. Then followed the familiar aftermath of depression.

Trade and industry continued in full swing during a large portion of 1907. An examination of the table of annual data on this page will suggest that the year was

[68] Sprague, O. M. W., *History of Crises Under the National Banking System*, p. 241.

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1904–1907 [a]

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings		Bureau of Labor Statistics Index of Wholesale Prices
				Frickey's Index	Snyder's Index	
1904						
January...	.92	83	—10	90	100.0	84
February..	1.20	89	— 5	93	101.5	85
March....	1.45	91	— 8	91	100.1	85
April.....	1.55	83	— 6	94	100.0	84
May.....	1.53	81	— 8	89	97.6	84
June.....	1.29	81	—10	92	98.0	84
July.....	1.11	71	—12	93	97.5	83
August....	1.17	88	—12	94	99.4	83
September	1.35	84	— 8	95	100.8	83
October...	1.45	93	— 9	96	101.9	83
November	1.49	95	— 4	101	104.6	83
December.	1.62	97	— 5	103	107.0	84
1905						
January...	1.78	98	— 5	96	107.8	84
February..	1.60	103	— 5	100	106.6	85
March....	1.94	110	— 2	102	106.5	85
April.....	1.92	95	— 1	101	107.6	85
May.....	1.94	92	0	106	109.8	84
June.....	1.79	90	0	103	109.8	84
July.....	1.74	84	— 1	97	109.6	85
August....	1.84	96	0	105	109.6	86
September	1.90	102	+ 2	105	110.3	86
October...	2.05	107	+ 2	104	111.2	87
November	2.01	98	+ 4	107	111.4	88
December.	2.04	101	+ 7	108	112.0	89
1906						
January...	2.07	106	+10	114	115.8	89
February..	1.90	104	+ 9	107	116.5	90
March....	2.15	114	+ 7	108	116.0	90
April.....	2.07	107	+ 5	102	111.4	90
May.....	2.10	105	+ 8	104	109.9	90
June.....	1.98	101	+ 7	106	109.2	90
July.....	2.01	103	+ 7	104	109.6	90
August....	1.93	106	+ 8	109	110.9	90
September	1.96	103	+ 5	103	109.7	91
October...	2.20	118	+10	109	111.5	91
November	2.19	120	+11	110	111.1	93
December.	2.23	134	+13	107	112.4	94

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1904–1907 [a] (Continued)

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings		Index of Wholesale Prices
				Frickey's Index	Snyder's Index	
1907						
January...	2.20	127	+17	110	113.3	95
February..	2.04	123	+14	109	113.5	95
March....	2.23	133	+15	110	114.4	96
April.....	2.22	130	+16	112	113.5	95
May.....	2.29	126	+18	115	114.1	96
June.....	2.23	112	+16	107	112.8	96
July.....	2.25	125	+18	112	112.9	96
August....	2.25	126	+16	109	112.2	96
September	2.18	106	+12	104	111.0	97
October...	2.34	112	+13	111	110.4	97
November	1.83	111	— 4	84	101.6	95
December.	1.23	92	—12	78	93.8	93

[a] Wholesale prices from Bureau of Labor Statistics. Pig iron data from source cited on p. 255. Other series from sources cited on pp. 241, 242, 255.

a better one for business men than any preceding. All of the physical measures of the volume of output and of commercial transactions during 1907 exceeded the high records made in 1905 and 1906. These data offer convincing evidence that business activity did not slacken very early in the year. Hansen says: "The industrial activity of the two preceding years continued in the United States until October, 1907." [69] This was likewise the view of the *Financial Review,* although it made an exception of the copper and steel trades.[70]

In his study of this period Mitchell draws a distinction between "business activity" and the "volume of general business." He writes: "The crisis—that is, the recession of business activity—antedated the panic by several months. It is true that the volume of general business and the rate

[69] Hansen, A. H., *Cycles of Prosperity and Depression,* p. 13.
[70] 1908, p. 13. But the reviewer said: "Mills, factories and furnaces were kept busy on past orders. . . ."

of industrial production gave few signs of waning before the bank failures of November. But prices of raw materials had begun to recede in the spring or early summer, new orders were lighter in the iron and steel trades, the copper market was oppressed by the accumulation of unsold stocks, and three large industrial enterprises . . . . were forced into the hands of receivers in June, August, and October." [71]

An examination of the various indexes of business activity given on page 278 will suggest that there was some slight curtailment of activity in June, but the indications are not at all marked, and the tendency was reversed in July. Each of the indexes wavers later, and, with one exception, the October figures register an advance. Perhaps the strangest circumstance is the sharp rise of the index of pig iron production to a record high in October, 1907.

The data relative to building permits do not reveal any slackening in activity during the first six months of the year. There was a decided decrease in the volume of building permits issued during the third quarter and a less marked decline in merchandise imports.[72]

We conclude that the beginning of the recession may fairly be dated in August, and the beginning of the depression in November.

VIII. MODERATE PROSPERITY AND MILD DEPRESSION, 1908-1914

There is no question as to the depressed character of business conditions during the first part of 1908, but the evidence concerning the time when the recovery set in is not altogether clear. Both clearings indexes climb slowly

[71] *Business Cycles*, p. 77. At another point in this study Mitchell says: "Months before the panic broke out, tension in the investment market had caused a slackening of new construction. Copper was among the commodities which suffered a loss of demand." p. 515.

[72] Monthly figures indicate that the shrinkage in the flow of imports did not occur until September, while there was a considerable falling off in the volume of building permits issued in August.

upward from the very beginning of the year, as likewise do the quarterly totals of merchandise imports, but with no especially steep slope at any time.[73] Hansen and Thorp both apply the term "depression" to the entire twelve months, although Thorp qualifies this description somewhat by noting that there were "signs of improvement late in the year."[74] The trend of wholesale prices was downward until December.[75] Other testimony is to the effect that a marked upward movement began about the opening of the third quarter. Several of the indexes indicate this.[76] Mitchell says:

In the autumn the hopeful tone began to extend from financial to commercial and industrial circles. Despite the slow rate of consumption, stocks of goods on the shelves of merchants and in the yards and warehouses of manufacturers had run so low that increased purchases became necessary.[77]

The second half of the year, accordingly, and still more the last quarter, brought a distinct increase in the volume of production and of general business. The evidence is not in complete agreement, but the weight of opinion seems to place the beginning of the revival during the third quarter of the year.

[73] It is true that the latter series — merchandise imports — did make a marked gain in the last quarter of 1908, but to have done otherwise would have been an unfavorable sign, as a glance at the seasonal record of preceding years will show.

[74] Thorp, W. T., *Business Annals,* p. 140. Hansen, A. H., *Cycles of Prosperity and Depression,* p. 14.

[75] But Mitchell shows that the prices of "producers' goods" moved steadily upward after September, *Business Cycles,* p. 99; and Dr. W. C. Schluter points out that the prices of raw materials were lowest in May, 1908. *The Pre-War Business Cycle, Columbia University Studies in History, Economics and Public Law,* 1923, p. 23.

[76] In particular, the American Telephone and Telegraph Company Index, the index of pig iron production, the Harvard Index of Trade.

[77] *Business Cycles,* p. 83. See also Schluter, *The Pre-War Business Cycle,* pp. 34-35.

The revival phase of the cycle continued through the first half of 1909 and for the remainder of the year the country experienced a mild but growing prosperity. There is quite general agreement among students as to this brief characterization of the business developments of the year.[78] The various statistical series that have been brought together here seem to be in agreement in picturing 1909 as a year of rather rapidly improving conditions, although the volume of building permits fell off sharply during the last three months.

INDEXES OF ECONOMIC ACTIVITY, 1907–1914 [a]

Year	Merchandise Imports (In millions of dollars)	Male Immigrants (In thousands)	Number of Commercial Failures	Railway Freight Traffic (In billions of net ton miles)
1907.....	1423.2	961.8	11,725	237
1908.....	1116.4	241.9	15,690	218
1909.....	1475.4	665.7	12,924	219
1910.....	1562.9	748.1	12,652	255
1911.....	1532.4	488.2	13,441	254
1912.....	1818.1	674.6	15,452	264
1913.....	1792.6	936.0	16,037	302
1914.....	1789.3	439.5	18,280	289

[a] Immigration data from Jerome, Harry, *Migration and Business Cycles*, 1926, p. 246; freight tonnage from *Statistical Abstract of the United States*, 1924, p. 367; other series from sources cited in previous tables.

Even this mild prosperity did not continue long after the opening of the new year, 1910.[79] Of the five indexes reproduced on page 282, four reached their highest point for this cycle in March, 1910. The volume of merchandise imports was decidedly smaller in the second quarter of the year, and the volume of building permits was much less than during the corresponding quarter of 1909. Following this reversal of their trend in the early spring, each index moved

[78] *Financial Review*, 1910, p. 16; Mitchell, *Business Cycles*, p. 83; Schluter, *The Pre-War Business Cycle*, p. 45.
[79] 1910, p. 9.

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1908–1914 [a]

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings		Bureau of Labor Statistics Index of Wholesale Prices
				Frickey's Index	Snyder's Index	
1908						
January...	1.04	85	—14	88	87.6	93
February..	1.08	85	—15	90	89.9	92
March....	1.23	89	—15	87	92.6	92
April.....	1.15	87	—14	90	92.4	92
May.....	1.16	84	—17	88	91.9	91
June.....	1.09	92	—17	87	92.3	90
July.....	1.22	86	—16	91	93.6	90
August....	1.35	91	—13	87	94.2	90
September	1.42	98	—11	93	96.3	90
October...	1.56	102	—11	89	95.6	90
November	1.58	104	— 9	91	95.8	90
December.	1.74	112	— 8	93	96.4	91
1909						
January...	1.80	104	— 5 [b]	93	98.3	92
February..	1.70	119	— 5	95	99.9	92
March....	1.83	133	— 5	96	100.6	92
Arpil.....	1.74	122	— 5	98	101.5	92
May.....	1.88	116	— 3	98	101.5	93
June.....	1.93	125	— 2	100	101.9	93
July.....	2.10	112	+ 1	100	101.7	93
August....	2.25	117	+ 2	100	102.9	93
September	2.38	121	+ 5	104	103.4	95
October...	2.60	128	+ 8	100	103.6	95
November	2.55	140	+ 9	102	103.8	97
December.	2.63	139	+10	106	104.3	98
1910						
January...	2.61	134	+12	100	104.4	98
February..	2.40	130	+10	101	103.9	98
March....	2.62	163	+12	108	104.8	99
April.....	2.48	134	+11	106	105.6	99
May.....	2.39	119	+ 6	100	104.9	98
June.....	2.26	120	+ 7	103	103.1	97
July.....	2.15	117	+ 4	100	101.5	97
August....	2.11	138	+ 4	99	101.7	97
September	2.06	117	+ 4	98	100.8	97
October...	2.09	124	+ 4	96	100.2	97
November	1.91	130	+ 2	98	99.9	96
December.	1.78	137	+ 1	97	100.0	96

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1908–1914 [a] (Continued)

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings		Bureau of Labor Statistics Index of Wholesale Prices
				Frickey's Index	Snyder's Index	
1911						
January...	1.76	131	0	94	100.5	95
February..	1.79	122	— 1	95	100.2	95
March....	2.19	139	0	101	101.0	95
April.....	2.06	120	— 3	96	100.2	95
May.....	1.89	130	— 2	100	100.8	95
June.....	1.79	123	— 1	100	100.8	95
July.....	1.79	118	— 2	97	101.5	95
August....	1.93	126	— 1	98	101.5	96
September	1.98	125	— 1	98	101.0	96
October...	2.10	133	— 1	92	99.7	96
November	2.00	126	— 1	97	99.0	96
December.	2.04	141	— 2	95	98.1	96
1912						
January...	2.06	144	— 2	98	98.6	97
February..	2.10	134	+ 3	102	101.4	97
March....	2.40	158	+ 3	99	101.3	98
April.....	2.37	163	+ 6	104	101.8	100
May.....	2.51	156	+ 5	104	100.8	100
June.....	2.44	131	+ 3	97	100.0	99
July.....	2.41	149	+ 5	102	99.4	99
August....	2.51	155	+ 6	104	99.8	99
September	2.46	145	+ 5	100	100.7	100
October...	2.69	178	+ 8	108	101.9	100
November	2.63	153	+ 7	104	101.3	100
December.	2.78	154	+ 7	101	101.3	100
1913						
January...	2.79	163	+10 [b]	107	101.6	100
February..	2.59	150	+ 8	105	102.7	100
March....	2.76	155	+ 3	100	102.6	100
April.....	2.75	146	+ 5	103	100.8	100
May.....	2.82	134	+ 5	104	99.1	99
June.....	2.63	131	+ 4	101	98.5	99
July.....	2.56	139	+ 5	102	98.3	100
August....	2.54	138	+ 2	99	97.0	100
September	2.50	171	+ 3	104	97.8	102
October...	2.55	133	+ 5	103	98.1	101
November	2.23	148	— 1	95	97.2	100
December.	1.98	184	— 2	100	96.4	99

MONTHLY INDEXES OF BUSINESS ACTIVITY, 1908–1914 [a] (Continued)

Year and Month	Pig Iron Production (In millions of long tons)	Merchandise Imports (In millions of dollars)	American Telephone and Telegraph Company Index of Business	Clearings		Bureau of Labor Statistics Index of Wholesale Prices
				Frickey's Index	Snyder's Index	
1914						
January...	1.88	155	0	100	95.7	98
February..	1.88	148	— 2	99	96.4	99
March....	2.35	183	0	99	96.2	98
April.....	2.27	174	— 1	101	96.1	98
May.....	2.09	164	— 5	95	95.1	97
June.....	1.92	157	— 4	98	94.9	97
July.....	1.96	160	— 2	99	94.7	97
August....	1.99	130	— 8	90	93.3	101
September	1.88	140	—10	89	90.1	102
October...	1.78	138	—13	86	85.4	97
November	1.52	126	—17	83	83.1	97
December.	1.52	115	—18	86	83.0	97

[a] Sources, same as those for table on pp. 277, 278.
[b] Composition of index changes at this point.

gradually downward during the balance of the year, except that of pig iron production, which took a rather abrupt drop. It is quite evident that a business recession set in about April, 1910, and that before the end of the year trade and industry had once more slipped into a depressed condition.

The *Financial Review* was rather vague regarding the date when business recession began. The year was described generally as "one of retrogression in business and in security values. . . ." [80] In a survey of the railroads' experiences during 1910 it said: "Trade reaction was an influence only during the latter half of the year . . ." and in its analysis of business failures for the year the particularly unfavorable record of the third quarter was said to be due to "the let-up in business activity." [81] But elsewhere an earlier turning point was indicated: "When, in the last half of the year, ex-President Roosevelt, after

[80] 1911, p. 9.
[81] *ibid.*, p. 41.

his return in June from his long hunt appeared on the scene and took active part in affairs, the situation and uneasiness were greatly intensified. But . . . . this was simply the climax, not the beginning, of the troubles to which the depression in trade and security values must be ascribed." [82] The dullness of business in 1911 was again generally ascribed to politics. In February the Interstate Commerce Commission refused to give its approval to rate increases which had been requested both by Eastern and by Western carriers, and in October a Federal suit was instituted against the United States Steel Corporation. These moves were held responsible for a curtailment of business activities which brought the year's volume of trade and industry slightly below that of 1910. "The reaction, however, was only of ordinary proportions. Compared with the tremendous setback that occurred in 1908, following the panic of 1907, it was really insignificant." [83]

That highly satisfactory business conditions prevailed in the United States during 1912 is shown by the marked gains made in that year in each series of annual data set out in the table on page 281.[84] A marked improvement in trade and industry did occur almost with the opening of the new year. Trade comment was to the effect that developments in January were "not altogether favorable," nor did February bring any more encouraging statements. It was not until its report for March that the *Financial Review* said: ". . . . the tone in business and financial circles is decidedly improved. . . . ." [85] Nevertheless, each of the various indexes of business activity indicates markedly improving conditions either in January or February. One cannot be far wrong in dating the recovery from the first month of the year.

[82] *ibid.*, p. 10.
[83] *Financial Review*, 1912, p. 11.
[84] The increase in the number of commercial failures, obviously, is not a favorable development. Currently it was charged against the high cost of living. See *Financial Review*, 1913, pp. 50-51.
[85] 1913, p. 22.

The evidence regarding the terminating point of this period of prosperity is conflicting. Thorp divides the year into periods of "revival" and "prosperity," and adds, "improvement marked last half year."[86] Schluter concludes: "After the revival got under way, the year of 1912 saw an uninterrupted expansion from beginning to end."[87] On the other hand, Persons says: "A brief period of advancing trade terminated in the late fall of 1912. . . . ."[88] The indexes, with the single exception of pig iron production, moved slightly downward during the last quarter. Yet each index again reversed its direction during the early months of 1913, several of them reaching their highest levels during that time. It seems reasonable to say that the country was still enjoying prosperity when the year 1912 came to a close.

The year 1913 was one of greater volume of trade and industry than 1912, though activity was declining through a large part of the year.[89] Some of the quicker moving measures of activity point to a gradual decline beginning with February. Included in this group are the Harvard index of trade, the American Telephone and Telegraph Company's index, and Frickey's clearing index. The total of unfilled orders on the books of the subsidiary corporations of the United States Steel Corporation reached its maximum on December 31, 1912, and from that date declined steadily, month by month, to the end of 1913.[90] Other statistical series suggest that the recessive movement

[86] Thorp, W. L., *Business Annals,* p. 141.

[87] Schluter, W. C., *The Pre-War Business Cycle,* p. 107.

[88] Persons, W. M., "An Index of Trade for the United States," *Review of Economic Statistics,* 1923, p. 72.

[89] The very large increase in immigration in 1913 probably is an example of unusual lag in the effects of a change in industrial conditions upon migration. The quarterly figures, however, show a marked decline after the middle of the year. They are as follows, in thousands of immigrants: 140.4; 321.9; 266.3; 207.5. See Jerome. Harry, *Migration and Business Cycles,* 1926, pp. 240-241, p. 246.

[90] *Financial Review,* 1914, p. 65.

began two or three months after the opening of the year. Snyder's clearings index does not turn downward until March and the total of merchandise imports in that month failed to equal that of March, 1912. During January and February all previous records of corresponding months had been broken. The volume of pig iron production reached its peak in May. Still other indexes pushed the date of the reaction to some time after the middle of the year. It is very difficult to detect, in the revenues received by the railroads, any signs of diminishing activity until the fourth quarter of the year,[91] and wholesale prices reached a maximum in September.[92] The year 1913 offers an example, as did 1910, of a very gradual liquidation process. Determination of the points at which one stage of the cycle succeeded another is necessarily somewhat arbitrary.

The opinions of contemporary writers and of students of the period are not much more precise than the statistical evidence. The *Financial Review,* after pointing out that the maintenance of a large volume of trade during most of the year was "deceptive and misleading inasmuch as it was based on old orders," declared that after the turn of the year "when old orders had been nearly exhausted, the indications of trade reaction became very manifest even to superficial observers. It was then urged that tariff legislation was the cause. . . . . On the contrary, with the completion of tariff legislation, the reaction ran into depression of a very pronounced type." [93]

For the purposes of this study it will be considered that a recession began with the second quarter and extended over six months, the last three months of the year being a period of depression.

[91] Monthly data show that previous records were being broken, month by month, until October. *Statistical Abstract of the United States,* 1924, p. 368.

[92] The Bureau of Labor Statistics index reaches its highest level in the same month.

[93] 1914, p. 11. The new tariff measure became a law on October 3, 1913. Compare Thorp, *Business Annals,* p. 141; Schluter, *The Pre-War Business Cycle,* p. 128.

No such difficulty is met with in describing the course of business during 1914, as the entire year was one of depression. This became more and more intense from month to month, and especially so after July. With no significant exceptions each index tended downward, reaching its lowest point in December. The outbreak of the World War in July was, of course, the most important event of the year and reacted very adversely on trade in this country. But, as the *Financial Review* pointed out: "... the year was a dismal one in other respects—indeed was dismal throughout. The flame of war did not burst forth until seven months of the year had elapsed. Yet in these seven months the industrial situation kept steadily growing worse." [94]

The year ended with the country in a state of intense depression. One looks in vain even for the oft-noted "signs" of an approaching business recovery.

Concerning the war years, 1915-1918, it seems unnecessary to add anything to what has been said in Chapter XI. Nor does it seem necessary to discuss in detail the movements of business during the years from 1919 to 1926. Statistical data concerning the course of business in these years are readily accessible.[95]

[94] 1915, p. 7.

[95] Numerous series of data are assembled in Hardy and Cox, *Forecasting Business Conditions*, Appendix A; and in Snyder, *Business Cycles and Business Measurements*.

APPENDIX C

Approximate Time of Major Changes in General Business Conditions and in the Volume of Railroad Equipment Orders, 1870–1926

Change in General Business		Change in Railroad Purchasing		
Character of Change	Year and Month Change Began	Character of Change	Type of Equipment	Year and Quarter Change Began
Recovery	1871, May	Renewed activity	Rails	Before 1870
			Locomotives	1869 Fourth
			Freight and passenger cars	1870 Third
Recession	1873, September	Decline	Rails	1872 Third
			Locomotives	1873 First
			Freight and passenger cars	Second
Recovery	1879, April	Renewed activity	Freight and passenger cars	1878 First
			Rails	Third
			Locomotives	Fourth
Recession	1882, September	Decline	Rails	1881 Fourth
			Freight cars, locomotives	1882 Second
			Passenger cars	Third
Recovery	1885, October	Renewed activity	All equipment	1885 Third
Recession	1890, November	Decline	Rails	1889 Third
			Freight cars	1890 Second
			Locomotives, passenger cars	Third
Recovery	1891, August	Renewed activity	Rails, passenger cars	1891 First
			Freight cars, locomotives	Third
Recession	1893, April	Decline	All equipment	1893 Second
Recovery	1897, August	Renewed activity	Rails, locomotives	1897 First
			Freight and passenger cars	Third
Recession	1903, August	Decline	Rails, locomotives and passenger cars	1902 Fourth
			Freight cars	1903 Second
Recovery	1904, September	Renewed activity	Freight cars, passenger cars, locomotives	1904 Third
			Rails	Fourth
Recession	1907, August	Decline	Locomotives, freight and passenger cars	1907 First
			Rails	Second

APPROXIMATE TIME OF MAJOR CHANGES IN GENERAL BUSINESS CONDITIONS AND IN THE VOLUME OF RAILROAD EQUIPMENT ORDERS, 1870–1926 (Continued)

Change in General Business		Change in Railroad Purchasing		
Character of Change	Year and Month Change Began	Character of Change	Type of Equipment	Year and Quarter Change Began
Recovery	1908, August	Renewed activity	Rails	1908 Fourth
			Freight and passenger cars	Third
			Locomotives	1909 Second
Recession	1910, April	Decline	Rails	1910 First
			Freight and passenger cars	Second
			Locomotives	Third
Recovery	1912, January	Renewed activity	Freight cars, rails	1911 Fourth
			Passenger cars, locomotives	1912 First
Recession	1913, April	Decline	Rails	1912 Fourth
			Freight	1913 First
			Locomotives, passenger cars	Second
Recovery	1915, September	Renewed activity	All types	1915 Third
Recession	1918, December			
Recovery	1919, April			
Recession	1920, April	Decline	Rails	1920 First
			Locomotives, freight and passenger cars	Second
Recovery	1922, January	Renewed activity	All types	1921 Fourth
Recession	1923, June	Decline	Locomotives, freight and passenger cars	1923 Second
Recovery	1924, July	Renewed activity	Locomotives, freight and passenger cars	1923 Fourth

APPENDIX D

Rate of Buying of Railway Equipment in Each Phase of the Business Cycles Indicated, 1871–1926

Cycle and Phase	Length of Period (In months)	Equipment Purchased			
		Rails	Locomotives	Freight Cars	Passenger Cars
May 1871–Mar. 1879:	95	1,974	3,673	89,935	2,604
Recovery May 1871–Dec. 1871	8	89	409	8,550	118
Prosperity Jan. 1872–Aug. 1873	20	230	1,343	11,883	407
Recession Sept. 1873–Oct. 1873	2	5	25	20	3
Depression Nov. 1873–Mar. 1879	65	1,650	1,896	69,482	2,076
Apr. 1879–Sept. 1885:	78	5,947	7,589	304,615	5,999
Recovery Apr. 1879–Dec. 1879	9	641	812	42,793	325
Prosperity Jan. 1880–Aug. 1882	32	2,925	4,390	168,979	3,381
Recession Sept. 1882–Apr. 1884	20	1,355	1,609	63,320	1,620
Depression May 1884–Sept. 1885	17	1,026	778	29,523	673
Oct. 1885–July 1891:	70	5,748	8,981	412,460	6,856
Recovery Oct. 1885–Dec. 1886	15	1,971	1,787	60,303	1,306
Prosperity Jan. 1887–Oct. 1890	46	3,422	6,261	318,111	4,681
Recession Nov. 1890–Dec. 1890	2	37	221	11,175	49
Depression Jan. 1891–July 1891	7	318	712	22,871	820
Aug. 1891–July 1897:	72	3,388	6,112	315,404	6,889
Recovery Aug. 1891–Dec. 1891	5	315	661	34,810	1,201
Prosperity Jan. 1892–Mar. 1893	15	671	2,508	96,813	3,691
Recession Apr. 1893–July 1893	4	121	267	7,470	276
Depression Aug. 1893–July 1897	48	2,281	2,676	176,311	1,721
Aug. 1897–Aug. 1904:	85	10,150	17,710	988,073	11,286
Recovery Aug. 1897–Oct. 1898	15	943	1,386	136,660	1,164
Prosperity Nov. 1898–July 1903	57	8,581	14,650	772,724	8,577
Recession Aug. 1903–Nov. 1903	4	123	537	19,410	623
Depression Dec. 1903–Aug. 1904	9	503	1,137	59,279	922
Sept. 1904–July 1908:	47	9,017	15,280	780,899	8,574
Recovery Sept. 1904–Dec. 1904	4	595	1,728	66,564	1,351
Prosperity Jan. 1905–July 1907	31	7,910	12,146	684,457	6,696
Recession Aug. 1907–Oct. 1907	3	113	794	9,244	151
Depression Nov. 1907–July 1908	9	399	612	20,634	376
Aug. 1908–Dec. 1911:	41	5,377	8,032	391,683	8,652
Recovery Aug. 1908–June 1909	11	1,268	1,491	67,277	2,728
Prosperity July 1909–Mar. 1910	9	1,725	2,740	172,498	2,901
Recession Apr. 1910–June 1910	3	102	957	26,806	277
Depression July 1910–Dec. 1911	18	2,282	2,844	125,102	2,746

Rate of Buying of Railway Equipment in Each Phase of the Business Cycles Indicated, 1871–1926 (Continued)

Cycle and Phase	Length of Period (In months)	Equipment Purchased			
		Rails	Locomotives	Freight Cars	Passenger Cars
Jan. 1912–Aug. 1915:	44	5,306	7,257	408,126	6,131
Recovery Jan. 1912–Mar. 1912	3	649	842	35,481	664
Prosperity Apr. 1912–Mar. 1913	12	2,169	3,592	194,726	2,445
Recession Apr. 1913–Sept. 1913	6	285	809	28,412	921
Depression Oct. 1913–Aug. 1915	23	2,203	2,014	149,507	2,101
Sept. 1915–Mar. 1919:	43	4,163	7,561	320,693	2,952
Recovery Sept. 1915–Dec. 1915	4	1,108	771	59,401	687
Prosperity Jan. 1916–Dec. 1917	24	3,052	4,637	159,757	2,265
Prosperity Jan. 1918–Nov. 1918	11	0	2,153	100,535	0
Recession Dec. 1918–Mar. 1919	4	0	0	1,000	0
Apr. 1919–Dec. 1921:	33	2,506	2,139	86,637	1,461
Recovery Apr. 1919–Sept. 1919	6	205	76	0	15
Prosperity Oct. 1919–Feb. 1920	5	981	298	9,435	367
Prosperity March 1920	1	23	329	11,074	223
Recession Apr. 1920–Sept. 1920	6	75	891	31,507	614
Depression Oct. 1920–Dec. 1921	15	1,222	545	34,621	242
Jan. 1922–June 1924:	30	3,777	4,664	324,552	5,033
Recovery Jan. 1922–Sept. 1922	9	1,767	1,607	122,824	1,529
Prosperity Oct. 1922–May 1923	8	277	2,071	111,421	1,811
Recession June 1923–Mar. 1924	10	1,556	738	65,363	1,286
Depression Apr. 1924–June 1924	3	177	248	24,944	407
July 1924–Dec. 1926:					
Recovery July 1924–Dec. 1924	6	1,031	562	59,775	1,254
Prosperity Jan. 1925–Dec. 1926[a]	24	3,512	2,329	133,491	3,681

[a] Study ends with December 1926.

APPENDIX E

INDEX OF GROSS EARNINGS OF RAILROADS

The monthly railroad gross earnings figures, for the period from 1869 to 1910, were taken from tables published in the *Commercial and Financial Chronicle* and the *Financial Review;* for the years since 1910 they were obtained from the reports of the Interstate Commerce Commission.[1] The tables appearing in the *Chronicle* and the *Financial Review* were represented as including the operations of the more important railroad systems, while the Interstate Commerce Commission's statistics were for all Class I carriers.

For most of the time from 1869 to 1910, the gross earnings figures were given in the Investors' Supplement of the *Chronicle,* but during the early seventies, when information was available from only a small number of roads, brief tables were published in the main section of the *Chronicle.* The data in the *Financial Review* duplicated those appearing in the *Chronicle.* The *Review* was used for the latter half of the seventies because the figures were given there in summary tables. These were more convenient to use than the tables then appearing at irregular intervals in the news section of the *Chronicle* itself.

The gross earnings tables in these financial publications included statistics covering at least two years of operations, and in most cases four or five years.[2] This circumstance was of considerable importance during the years before

[1] Since one section of the gross earnings index extends to 1912 and the following one begins in 1910, data were taken from the *Chronicle,* in part, for the two years 1911 and 1912, as well.

[2] There were a few exceptions to this in the case of newly reporting roads which did not furnish data covering years prior to those whose operations were being covered currently. These exceptions were all limited to the first years of the seventies.

the Interstate Commerce Commission began to require prompt and uniform reports, in that it provided time for the carriers to make adjustments in the statistics appearing in the *Chronicle*. The extended tables given in the latter pages of the Investors' Supplements seem to have been based on data published from week to week in the main section of the periodical. These latter reports, which often included the results of a week's operations only, were issued as promptly as possible and in many cases appeared to be approximate figures. That is, they were incomplete, certain parts of a system being later than others in filing their reports. Frequent revisions were made in the data and almost invariably the last figures were the largest. In gathering statistics for the index, the data covering any year's operations which were last published were always used, of course.

In addition to statistics on gross earnings, the tables also gave the number of miles of railway operated by each road at the beginning and at the end of each year. If there was no change in the mileage, only one figure was included. The inclusion of these statistics was very useful for a variety of reasons. It made it possible to determine the length of mileage whose operations were included in the gross earnings figures. This was an important thing to know during a period of years in which ownership was changing so rapidly.[3] It gave a direct, year-by-year check on the relative proportion of the railroad mileage of the country which was included in the gross earnings index. Furthermore it served many times to account for apparent discrepancies in the data. Frequently a considerable difference in the monthly statistics that were published in successive issues

[3] Checking the annual totals found in the *Chronicle* against those given in Poor's *Manuals* was difficult because of differences in the amounts of mileage included under the same railroad titles. This was especially true in the case of rapidly growing systems. Usually it was found that the totals in the *Manuals* were somewhat larger.

of the *Chronicle* was caused by a difference in the length of line whose operations were covered. For example, as a means of making broader comparisons possible, later reports of one year's operations of a given road would be made to include the gross earnings of small lines which were absorbed subsequently to the date of the issuance of the first report.

It was clearly impossible to make an index of gross earnings based on the operations of the same roads for the entire period from 1870 to 1910. Merely from the changing lists of titles appearing in the tables it can be inferred that many of the roads which were outstandingly important during the seventies have long ago lost their identities, having been swallowed up by growing systems. The later records of the absorbed roads could not be distinguished from those of the systems of which they became a part. On the other hand, titles which today are recognized as covering the operations of thousands of miles of line were then entirely missing from the published lists. Apparently the roads which bore these titles at that time were so small as to make the reports of their operations of little general interest.[4]

Another cause of difficulty in compiling gross earnings data over an extended period of time was the appearance of gaps, often covering a year or more, in the series of monthly data for certain roads. These seemed to occur most frequently at times of reorganization or of realignment of stock holding groups.

These conditions made it necessary either to set aside entirely the records of those roads which were affected by any of the circumstances mentioned above, or to use the reports of their operations for limited periods only. Strictly

[4] Although these modern systems did not appear by name in the lists of the earliest years which the index covers, it was eventually found possible to use them in constructing the index. This was accomplished by including in the early years the gross earnings of the separate small operating units which later merged to form the modern systems, in so far as they furnished statistics. These reports were numerous enough to prevent the appearance of large jumps in the mileage figures.

speaking, even these alternatives did not exist. No statistics which were even reasonably representative of the situation of the railroads as a whole could have been compiled from the experience of identical roads throughout the period from 1869 to 1926. There were only three roads whose reports on gross earnings were continuous and uninterrupted in the *Chronicle,* and for the most part they served Middle Western territory only.[5] After some experimenting it was found that by splitting up the whole period into four divisions, and constructing a section of the index for each division it was possible to secure data from a sufficient number of roads at all stages of the period to provide a fairly representative sample. The four sections overlap one another to the extent of eight quarters in each case, and thus, in effect, a continuous measure of variations in the volume of railroad gross earnings was obtained.[6]

Since this procedure made it possible to incorporate the gross earnings figures of relatively large and expanding systems in the index, it was presumed that not only would a representative sample be secured but that the mileages covered by the index figures would increase at about the same rate as that of the country as a whole. The ratios between the two sets of mileage figures which are given on pages 300-301, indicate to what extent this expectation was realized.

No adjustments were made for secular trend or seasonal variations.[7] The index was not designed primarily to measure cyclical movements. The purpose in view was rather to make it possible to determine the relationship in point of time between railroad gross earnings and railroad purchasing. Original data and not corrected figures formed the better basis for such a comparison.

[5] These roads were: Chicago Milwaukee, and St. Paul; Chicago and Northwestern; and Illinois Central.

[6] The limits of the periods, together with the names of the roads whose records are included in each period, are given on pages 298-299.

[7] Elimination of the trend would have made the cyclical movement a little clearer, but at the sacrifice of the picture of the growth of the industry.

GROSS EARNINGS

This brief description of the methods used in making the index of gross earnings has been limited for the most part to the portions of the index covering the years from 1869 to 1910. As was stated above, the last section includes the monthly statistics of all Class I carriers compiled by the Interstate Commerce Commission. These data obviously constitute a representative sample which comprises trustworthy information.

The index of gross earnings which is on a quarterly basis is made up of four sections as follows: 1869-1873, 1872-1883, 1882-1911, 1910-1926. The roads whose earnings are included in each of the four sections of the index, respectively, are listed on pages 298-299. This table also indicates the years in which the earnings of some of these roads began to be reported as a part of the total earnings of a larger system. These dates were not always the same as those on which the smaller roads were officially joined to the parent system.

On pages 300-301 a table is given which tells the total mileage of the roads whose gross earnings make up the index for each of the years covered by the index from 1869 to 1911, the railroad mileage of the country as a whole for each of these years, and the proportion of the latter mileage included in the index. These data are not given for the last section of the index, inasmuch as the gross earnings of all Class I carriers appear in the index itself. During the years when the mileage of the country was growing most rapidly, that is, prior to 1900, the index in reality covered an appreciably larger proportion of this mileage than the percentage figures indicate, the reason being that the mileage figures of the index are in each case for the opening of the year whereas the mileage figures for the country as a whole refer to the end of each fiscal year. There was no uniformity in the time in which the fiscal years ended, but for most of the roads it was in June, September, or December. This meant that the annual totals for the country as a whole included the increases that occurred

during any year up to the end of each road's fiscal year. These increases were not included in the mileage figures of the index until the succeeding year.

The gross earnings included in the first section of the index were obtained from the files of the *Commercial and Financial Chronicle*. Roads were chosen for which the data were complete, and it was necessary to make estimates of monthly revenues only in very rare instances. The revenues for the Union Pacific Railroad for six months in 1879 and three months in 1880 were obviously inadequate and not comparable with the figures for the remaining months of the year.[8] A partial explanation for this lies in the fact that the system was expanding and the earnings of the newly acquired lines were not included uniformly. A sufficient amount of data was available upon which to base estimates so that it is believed that the figures used are sufficiently accurate. In only two cases was it necessary to estimate the earnings of other roads and then for only a single month in each case.

Identical roads are included in each section of the index throughout the period which it covers. The only exception is in the third section, in which the earnings of the New York Central are included only from 1885 on. The *Chronicle* did not contain reports from the New York Central for the three previous years, but they were included for all years thereafter. An examination of the mileage table will disclose the fact that the increase in the mileage covered by the index was not unusually large in 1885.

I. Index of Gross Earnings — Railroads Included

First Section of Index, 1869-1873.
- Central Pacific
- Chicago, Milwaukee and St. Paul
- Chicago and Northwestern
- Cleveland, Columbus, Cincinnati and Indianapolis
- Illinois Central
- Marietta and Cincinnati

[8] These months in each case were scattered throughout the year in question.

Michigan Central
Ohio and Mississippi
Pacific of Missouri
Toledo, Wabash and Western

Second Section of Index, 1872-1883
Burlington, Cedar Rapids and Northern
Central Pacific
Chicago, Milwaukee and St. Paul
Chicago and Northwestern
Illinois Central
Indianapolis, Bloomington and Western
Kansas Pacific [a]
Missouri, Kansas and Texas
Mobile and Ohio
St. Louis, Iron Mountain and Southern
Union Pacific

Third Section of Index, 1882-1911
Alabama Great Southern
Atchison, Topeka and Santa Fe
Charlotte, Columbus and Augusta [b]
Chesapeake and Ohio
Chicago and Eastern Illinois [c]
Chicago, Milwaukee and St. Paul
Chicago and Northwestern
Columbus and Greenville [a]
Denver and Rio Grande
Illinois Central
Illinois Central in Iowa [d]
Louisville and Nashville
Mobile and Ohio
Nashville, Chattanooga and St. Louis
New York Central
Norfolk and Western
Northern Central
Northern Pacific
Pennsylvania (East of Pittsburg)
Richmond and Danville [b]
St. Louis, Alton and Terre Haute [e]
St. Louis and San Francisco
Southern
Virginia Midland [b]
Western North Carolina [b]

Fourth Section of Index, 1910-1926
All Class I carriers.

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[a] Earnings included in U. P. totals in 1879 and succeeding years.
[b] Earnings included in Southern totals in 1892 and succeeding years.
[c] Earnings included in St. Louis and San Francisco totals in 1903 and succeeding years.
[d] Earnings included in Illinois Central totals in 1889 and succeeding years.
[e] Earnings included in Illinois Central totals in 1895 and succeeding years.

II. Total Mileage Operated in the United States Compared with Mileage Covered by Index

Year [a]	Total Mileage [b] (In thousands)	Mileage Covered by Index (In thousands)	*Mileage Included in Index as Percentage of Total Mileage*
	First Section		
1869.....	46.8	5.3	*11.4*
1870.....	52.9	6.0	*11.2*
1871.....	60.3	6.8	*11.3*
1872.....	66.2	7.4	*11.1*
1873.....	70.3	8.0	*11.4*
	Second Section		
1872.....	66.2	7.8	*11.8*
1873.....	70.3	8.8	*12.5*
1874.....	72.4	9.7	*13.4*
1875.....	74.1	9.7	*13.2*
1876.....	76.8	9.8	*12.8*
1877.....	79.1	10.6	*13.4*
1878.....	81.7	11.2	*13.8*
1879.....	86.6	11.8	*13.6*
1880.....	93.3	13.9	*14.9*
1881.....	103.1	16.9	*16.4*
1882.....	114.7	19.6	*17.1*
1883.....	121.4	20.6	*16.9*
	Third Section		
1882.....	114.7	22.4	*19.5*
1883.....	121.4	24.9	*20.5*
1884.....	125.3	26.6	*21.2*
1885.....	128.3	28.1	*21.9*
1886.....	136.3	29.5	*21.6*
1887.....	149.2	32.6	*21.9*
1888.....	156.1	37.9	*24.3*

TOTAL MILEAGE OPERATED IN THE UNITED STATES COMPARED WITH MILEAGE COVERED BY INDEX (Continued)

Year [a]	Total Mileage [b] (In thousands)	Mileage Covered by Index (In thousands)	*Mileage Included in Index as Percentage of Total Mileage*
Third Section (Continued)			
1889.....	161.3	40.8	*25.3*
1890.....	167.2	41.3	*24.7*
1891.....	172.0	43.5	*25.3*
1892.....	175.7	45.4	*25.8*
1893.....	179.8	46.1	*25.7*
1894.....	182.7	47.8	*26.1*
1895.....	184.6	46.4	*25.2*
1896.....	186.7	46.7	*25.0*
1897.....	188.8	46.7	*24.7*
1898.....	190.9	48.1	*25.2*
1899.....	194.3	49.4	*25.4*
1900.....	199.0	53.3	*26.8*
1901.....	202.3	58.6	*29.0*
1902.....	207.2	59.3	*28.6*
1903.....	213.4	60.7	*28.5*
1904.....	220.1	63.7	*28.9*
1905.....	225.2	65.7	*29.2*
1906.....	230.8	67.0	*29.0*
1907.....	236.9	68.4	*28.9*
1908.....	240.8	69.0	*28.7*
1909.....	244.1	69.8	*28.6*
1910.....	250.0	71.7	*28.7*
1911.....	254.7	73.1	*28.7*
Fourth Section			
1910–1926. Includes all Class I Carriers.			

[a] Calendar years 1869–1889; years ending June 30, 1890–1911.
[b] Source: 1869–1889. *Poor's Manual of Railroads.*
1890–1911. Interstate Commerce Commission.

III. Total Gross Earnings of Roads Covered by Index

Year and Quarter	Amount (In thousands of dollars)	Year and Quarter	Amount (In thousands of dollars)
First Section			
1869:		1872:	
1st	11,105	1st	13,371
2nd	13,686	2nd	16,387
3rd	14,792	3rd	18,142
4th	15,094	4th	18,800
1870:		1873:	
1st	10,951	1st	14,617
2nd	14,177	2nd	18,678
3rd	15,929	3rd	20,531
4th	15,859	4th	18,738
1871:			
1st	11,779		
2nd	14,523		
3rd	16,890		
4th	16,413		
Second Section			
1872:		1876:	
1st	11,560	1st	14,930
2nd	15,494	2nd	18,783
3rd	17,105	3rd	19,052
4th	18,028	4th	20,720
1873:		1877:	
1st	13,125	1st	14,566
2nd	18,158	2nd	16,929
3rd	19,902	3rd	19,546
4th	19,104	4th	21,827
1874:		1878:	
1st	14,397	1st	16,449
2nd	17,919	2nd	18,722
3rd	18,454	3rd	20,201
4th	19,742	4th	21,667
1875:		1879:	
1st	13,680	1st	15,554
2nd	18,660	2nd	19,009
3rd	19,352	3rd	20,244
4th	20,863	4th	24,860

TOTAL GROSS EARNINGS OF ROADS COVERED BY INDEX (Continued)

Year and Quarter	Amount (In thousands of dollars)	Year and Quarter	Amount (In thousands of dollars)
Second Section (Continued)			
1880:		1882:	
1st	20,161	1st	27,874
2nd	23,601	2nd	31,336
3rd	26,909	3rd	34,916
4th	29,933	4th	37,095
1881:		1883:	
1st	21,439	1st	28,092
2nd	29,323	2nd	32,445
3rd	31,393	3rd	36,217
4th	34,432	4th	37,589
Third Section			
1882:		1887:	
1st	38,271	1st	56,948
2nd	41,812	2nd	61,538
3rd	47,517	3rd	69,266
4th	50,872	4th	73,701
1883:		1888:	
1st	41,984	1st	59,182
2nd	45,874	2nd	65,097
3rd	51,662	3rd	72,321
4th	54,583	4th	75,909
1884:		1889:	
1st	41,431	1st	63,258
2nd	46,594	2nd	67,510
3rd	48,828	3rd	78,681
4th	51,723	4th	84,388
1885:		1890:	
1st	44,340	1st	71,088
2nd	49,424	2nd	76,887
3rd	53,569	3rd	84,596
4th	60,612	4th	89,129
1886:		1891:	
1st	48,765	1st	75,298
2nd	53,186	2nd	81,193
3rd	61,717	3rd	92,563
4th	65,782	4th	98,001

TOTAL GROSS EARNINGS OF ROADS COVERED BY INDEX (Continued)

Year and Quarter	Amount (In thousands of dollars)	Year and Quarter	Amount (In thousands of dollars)
Third Section (Continued)			
1892:		1900:	
1st	82,551	1st	112,135
2nd	86,163	2nd	115,379
3rd	97,234	3rd	128,241
4th	101,002	4th	137,218
1893:		1901:	
1st	84,887	1st	128,190
2nd	91,222	2nd	134,043
3rd	88,253	3rd	147,454
4th	92,962	4th	154,277
1894:		1902:	
1st	73,079	1st	136,478
2nd	72,966	2nd	146,531
3rd	81,258	3rd	157,366
4th	89,191	4th	167,085
1895:		1903:	
1st	71,945	1st	153,332
2nd	75,739	2nd	165,638
3rd	86,781	3rd	175,594
4th	98,196	4th	176,411
1896:		1904:	
1st	79,105	1st	154,947
2nd	79,419	2nd	161,533
3rd	84,564	3rd	175,368
4th	90,970	4th	187,141
1897:		1905:	
1st	76,265	1st	160,646
2nd	80,909	2nd	176,222
3rd	95,371	3rd	192,155
4th	102,079	4th	208,327
1898:		1906:	
1st	87,834	1st	187,766
2nd	88,436	2nd	189,745
3rd	97,986	3rd	214,085
4th	109,411	4th	224,668
1899:		1907:	
1st	92,772	1st	207,456
2nd	100,581	2nd	228,456
3rd	114,940	3rd	235,013
4th	123,732	4th	228,695

TOTAL GROSS EARNINGS OF ROADS COVERED BY INDEX (Continued)

Year and Quarter	Amount (In thousands of dollars)	Year and Quarter	Amount (In thousands of dollars)
Third Section (Continued)			
1908:		1910:	
1st	180,575	1st	225,080
2nd	180,570	2nd	234,977
3rd	209,727	3rd	246,394
4th	222,710	4th	254,102
1909:		1911:	
1st	195,347	1st	221,073
2nd	207,117	2nd	228,782
3rd	233,669	3rd	245,154
4th	244,301	4th	253,875
Fourth Section			
1910:	(Millions)	1915:	(Millions)
1st	635.5	1st	650.7
2nd	692.6	2nd	718.4
3rd	739.3	3rd	819.5
4th	739.3	4th	890.9
1911:		1916:	
1st	631.1	1st	813.9
2nd	669.5	2nd	883.0
3rd	732.4	3rd	955.7
4th	741.0	4th	972.5
1912:		1917:	
1st	661.1	1st	883.3
2nd	694.4	2nd	1,014.9
3rd	803.2	3rd	1,073.4
4th	838.5	4th	1,076.9
1913:		1918:	
1st	722.8	1st	941.8
2nd	763.3	2nd	1,145.8
3rd	829.3	3rd	1,464.8
4th	815.3	4th	1,373.2
1914:		1919:	
1st	685.9	1st	1,127.0
2nd	722.4	2nd	1,229.5
3rd	792.7	3rd	1,425.6
4th	726.7	4th	1,401.3

TOTAL GROSS EARNINGS OF ROADS COVERED BY INDEX (Continued)

Year and Quarter	Amount (In millions of dollars)	Year and Quarter	Amount (In millions of dollars)
Fourth Section (Continued)			
1920:		1924:	
1st	1,385.6	1st	1,453.9
2nd	1,354.6	2nd	1,418.4
3rd	1,703.5	3rd	1,531.3
4th	1,784.5	4th	1,584.0
1921:		1925:	
1st	1,335.9	1st	1,426.9
2nd	1,339.9	2nd	1,469.7
3rd	1,466.9	3rd	1,643.6
4th	1,427.9	4th	1,648.6
1922:		1926:	
1st	1,272.6	1st	1,471.7
2nd	1,340.5	2nd	1,557.0
3rd	1,418.8	3rd	1,725.3
4th	1,587.5	4th	1,696.5
1923:			
1st	1,485.2		
2nd	1,612.7		
3rd	1,646.9		
4th	1,614.5		

APPENDIX F

Rolling Stock Built for Carriers While Under Federal Control [a]

I. FREIGHT CARS

Built for United States Railroad Administration under contracts dated May 1, 1918, by specified builders:

	Number of Cars	
The American Car & Foundry Co	31,000	
The Bettendorf Co	3,000	
The Cambria Steel Co	3,000	
Haskel & Barker Car Co	8,000	
Keith Car & Manufacturing Co	1,500	
Loconia Car Company	1,000	
Lenoir Car Works	2,000	
Liberty Car & Equipment Co	1,000	
Magor Car Corporation	1,000	
McGuire-Cummings Manufacturing Co	500	
Mount Vernon Car Manufacturing Co	4,000	
Pacific Car & Foundry Co	2,000	
Pressed Steel Car Company	14,000	
Pullman Company	8,000	
Ralson Steel Car Co	4,000	
St. Louis Car Co	1,000	
Standard Steel Car Co	14,500	
		99,500
Built by Carriers		466
Total		99,966

II. LOCOMOTIVES

Built for Railroad Administration by specified builders under contracts as indicated:

	Number of Locomotives		
American Locomotive Company:			
January 25, 1918	25		
April 30, 1918	800		
November 1, 1918	500		
November 21, 1918	25		
April 10, 1919	20		
February 28, 1920	20		
		1,390	
Baldwin Locomotive Company:			
April 30, 1918		470	
Lima Locomotive Company:			
June 12, 1918	60		
October 26, 1918	70		
July 7, 1919	30		
		160	
			2,020
Built by Carriers			44
Total			2,064

[a] Data obtained from the United States Railroad Administration.

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